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The NATIONAL BANKING REVIEW

VOLUME 3 NO. 2 DECEMBER 1965

CALIFORNIA INSTITUTE OF TECHNOLOGY
SEP 12 1966

A JOURNAL OF POLICY AND PRACTICE

THE ADMINISTRATOR OF NATIONAL BANKS
UNITED STATES TREASURY

Articles on

- Moderated Exchange Rate Variability
- Bank Entry Regulation
- Administration of the Discount Function
- Roosa on International Monetary Reform
- Multilateral Commercial Diplomacy
- Coin Shortage: Modern and Pre-Modern
- Quality Changes and Purchasing Power
- Market Yields on Equity Capital

- Comment and Rejoinder
- Legal and Regulatory Developments
- Selected Statistical Data
- Book Reviews

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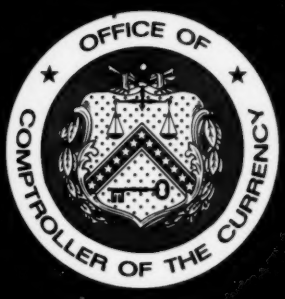

THE ADMINISTRATOR OF NATIONAL BANKS
UNITED STATES TREASURY, WASHINGTON, D.C.
A QUARTERLY PUBLICATION

The NATIONAL BANKING REVIEW

A JOURNAL OF POLICY AND PRACTICE

Volume 3 DECEMBER 1965 Number 2

Edited by the Senior Staff of the Department of Banking and Economic Research, Office of the Comptroller of the Currency.

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Published September, December, March, and June. Subscription rate: $4.00 per year. Checks should be made payable to the Comptroller of the Currency. Subscriptions should be addressed to: Editor, *The National Banking Review*, Office of the Comptroller of the Currency, United States Treasury Department, Washington, D. C. 20220.

Manuscripts should be addressed to: Editor, *The National Banking Review*, Office of the Comptroller of the Currency, United States Treasury Department, Washington, D. C. 20220. A style sheet will be submitted on request to the Editor.

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ON THE COVER—A steel engraving of the second Bank of the United States, created by Congress in 1816.

". . . to preserve a mild and gentle but efficient control over the monied institutions of the United States. . . ."
—*Nicholas Biddle*

Courtesy, Historical Society of Pennsylvania

► J. CARTER MURPHY

Moderated Exchange Rate Variability

It is well known that the problem of international liquidity can be viewed in part as a problem of exchange rate policy. In general, the narrower is the band of values through which exchange rates are permitted to fluctuate about official parities, and the longer a given pattern of parity rates is to be sustained, the greater is the stock of internationally acceptable money required for official reserves. This theorem follows from balance of payments adjustment theory, according to which an appropriate depreciation in the exchange value of a country's currency will in time always move the current account of the balance of payments in the direction of a reduced deficit or an enlarged surplus,[1] so that reserves are necessary only to bridge payments imbalances not eliminated by exchange rate correctives. The responses of capital flows to exchange rate alterations are, unfortunately, less well understood than the responses of current trade. Economists, however, have tended to believe that the long-term capital account is little affected by a given shift in the exchange rate, so that a disturbance originating in this sector can be offset by an adjustment of the

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[1] The logic of the conclusions of course rests on assumptions about the overall elasticity of buyer and seller responses to price changes within a reasonable period of time, and also on assumptions concerning the disposal of increments and decrements to national income. But extreme assumptions are required to invalidate the orthodox conclusions.

current account impelled by the exchange rate.

Advocates of freely fluctuating exchange rates extend the argument concerning the potential of depreciations to claim that unrestrained flexibility of rates not only will eliminate problems of international liquidity, but will leave other instruments of government economic policy, such as monetary and fiscal controls, unfettered for use in the pursuit of domestic prosperity. Critics of exchange rate flexibility justifiably respond, on the other hand, that sharp disturbances to markets are capable of stimulating large and rapid movements of an unbounded exchange rate, which will, in turn, tempt speculative secondary disturbances. In this circumstance, they say, long-term planning of trade and investment by business entities will be severely handicapped, and governments, in the end, will still find it necessary to tailor domestic measures to balance of payments needs.

The compromise in these positions forged at Bretton Woods has proved an unfortunate one. Postponement of currency revaluations until payments imbalances become patently "fundamental," as required by the International Monetary Fund Charter, virtually eliminates risk of capital loss for those who transfer funds from a weak to a strong currency. Capital movements that might be termed "speculative" under a regime of flexible exchange rates become acts of mere prudence under the I.M.F. provisions. As a result, since 1957 when most European currencies became freely convertible into gold and dollars, crisis-laden international support operations have been necessary for the Canadian dollar in 1962, for the Italian lira in 1964, and for the British pound in 1961, 1963, and 1964. The U. S. dollar was subject to sharp pressures in the autumn of 1960, and has been the object of harassing, if manageable, attacks since. At the time of this writing in 1965, the pound, and with it the North American currencies, are agin in some jeopardy. Deutschemarks and other European currencies have been off-and-on magnets for mobile short-term capital throughout the past eight years.

In order to deal with these shock waves in the financial community, the so-called "Group of Ten" leading financial countries has undertaken a number of continuing cooperative measures to support besieged currencies. Beginning after the disturbances associated with revaluation of the German and Dutch currencies in 1961, these governments negotiated new loan authorizations to the I.M.F., extensive currency swap agreements, interest-bearing nondollar loans to the United States amounting to over a billion dollars, and a joint operation to stabilize the free market price of gold. While these steps constitute important defenses of the existing exchange rate pattern and the unrestricted markets that make the rates effective, they are not—in spite of wishful thinking by some United States officials—a foundation for longer term financial development. Not only do they lack the commitment of treaty obligations and broad public cognizance, but they leave the international financial system's source of new liquid reserves dependent on economic policies in a few countries, fail to eliminate those flights of assets now so damaging to confidence, and in particular, do nothing to effectuate adjustments to fundamental disturbances.

The opportunity that present exchange rate rules provide for holders of a clearly overvalued currency to retreat from it without substantial risk contributes, of course, to the projected inadequacy in the supply of international money. In a regime where massive flight from a currency may compound the drain on a nation's reserves originating in a trade or long-term capital deficit, extraordinarily large reserves, owned or automatically available, are necessary to defend the currency. Fear of massive movements of short-term capital which are inspired by rumors of devaluations has led

money managers in the Group of Ten to be defensive of the existing exchange rate structure. But sanctification of the existing structure further amplifies international liquidity needs through denying the system any tolerable, yet effective, adjustment mechanism.

An important part of the international liquidity problem, then, is that the Charter of the International Monetary Fund provides no *orderly* means for adjustment of exchange rates. Under its mechanisms, overvalued rates become unbelievable rates, and then the change is accomplished abruptly and in an air of apprehension and suspicion. The alternatives to the Bretton Woods formula that are most frequently discussed are little more appealing. A regime in which exchange rates would never be changed—a position that seems to be advocated explicitly by the French government and implicitly by the United States at this time—would impose costly constraints on the efforts of deficit countries to obtain high levels of output and growth and on the efforts of surplus countries to restrain inflation. Exchange rates that are free of all limitations, on the other hand, are in danger of being overly flexible in practice. Some middle ground is necessary, but this ground must be devoid as possible of inducements to those speculative excesses that damn freely fluctuating rates and that have pressed monetary managers implementing the I.M.F. compromise into a timid defense of the existing rate pattern.

The remainder of this essay is a preliminary exploration of another kind of exchange variability compromise. It might be called the "moderated variability" proposal. Its essence is that it permits not only daily movements of exchange rates about established parity rates, but also steady adaptation of the parities themselves to the longer run needs of the market and at speeds that make speculation for capital gain relatively unremunerative.

Step One in implementing the proposal would be to restore a single common denominator, such as gold, for exchange rate stabilization calculations by the major trading countries, and then to maintain the market exchange rate between each currency and the numeraire within a ± 1 percent, or perhaps ± 1.5 percent, range of parity.[2] Linkage to the numeraire within such limits, supposing the numeraire itself not to be a national currency, would permit exchange rate variation among currencies of ± 2 or ± 3 percent. For most major countries, this would represent a broadening of the effective band of flexibility. The broadening would be implemented gradually, of course, in order that rates currently pressing their support limits not be released abruptly.

Step Two would be to introduce some variability into the parity rates themselves, in order that they might yield gradually to pulls from the daily market rates. A daily moving average based on an intermediate period suggests itself as the means for accomplishing this end. A parity rate between a national currency and gold, calculated daily from an annual

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[2] Under present arrangements, gold-parity obligations of members of the International Monetary Fund are fulfilled by a chain of "pegs." The prime link to gold for the system is provided by the United States Treasury, which purchases gold for international monetary purposes at the established parity minus .25 percent and sells it at parity plus .25 percent. Western European currencies are maintained within ± .75 percent of their gold-equivalent parities on the dollar; they may fluctuate as much as ± 1.5 percent in terms of each other. Currencies in the sterling and franc monetary areas are, in turn, pegged to the key currencies of their areas. The exchange rate for New Zealand pounds, for example, maintained within limits of approximately ± .3 percent of the parity on sterling, may vary by slightly more than ± 1 percent on the dollar and by about ± 1.8 percent on French francs. I.M.F. regulations permit a currency to vary as much as ± 1 percent on the currency to which it is pegged, but not more than ± 2 percent on any other currency.

moving average of daily open market gold prices, for example, could change at most by only about 2.1 percent per annum when the daily price was kept within a ± 1 percent range of each day's parity. With a ± 1.5 percent band of free flexibility, the movement of the gold parity could be as much as 3.0 percent per annum, although it would reach this only under steady one-directional market pressures.[3] It is important to note that maximum annual movements in *intercurrency* parity exchange rates could be as much as double the currency-to-gold rates in cases where one currency was appreciating relative to gold while another was depreciating. Intercurrency parities, therefore, might drift as much as 4.2 percent per annum, on the one hand, or slightly more than 6 percent, on the other, under the ± 1 and ± 1.5 percent gold stabilization ranges mentioned.

Gradual flexing of the intercurrency parity exchange rates at this pace could do much to adapt international payments to the profound influences on commerce that stem from divergent national monetary and fiscal policies and disparate national rates of technological, capital, and population change. Massive destabilizing speculation, however, could probably be avoided. Capital gains achievable through intercurrency parity adjustments of 4-6 percent per annum, with the possibility of loss always accompanying the chance of gain, do not seem likely to motivate large capital transfers. Most important, daily revaluation of the parities would deny speculators opportunities for short-term gains based on abrupt parity amendments.

To effectuate the proposal, the rigid relationship the U. S. Treasury maintains between dollars and gold through its purchases from domestic mines and in transactions with foreign monetary authorities would have to be abandoned. Instead, the Treasury would undertake to intervene in the private bullion market—a single place, presumably London, would have to be made the definitive market—to stabilize the dollar price of gold within the limits suggested in Step One. It would be natural for the United Kingdom to maintain its parity in the same way. Other countries might similarly deal in bullion, but would likely deal in one or more of the key currencies instead. They would intervene at exchange rates on a key currency which were equivalent to the required gold price support levels for their own money. Thus Denmark, if it had chosen to execute currency stabilization obligations with sterling rather than bullion, would support the krone when it was depreciated by .5 percent on sterling if sterling were depreciated by 1 percent relative to gold, with a 1.5 percent deviation from gold parity being the maximum allowable for any currency. The Bank of

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[3] The parity rate variations cited in the text are the result of computer runs of a hypothetical exchange rate in which the daily market gold price was held constant for every day of a year except the last in order to establish an initial parity, and then jumped on the last day to the maximum price permitted by the limits of the support band and sustained at the (moving) support limit. The rates of change mentioned are the annual rates of change "experienced" by the parity in the fourth year after introduction of the distrubance. The number of business days in a year was set at 307, following practice in the United States. In view of different holiday patterns throughout the world, however, a practical set of international parities might have to define the year as 365 days. In this case, maximum annual rates of parity movement, using one year as the basis for the moving average, would be somewhat smaller than the rates mentioned. Each day's parity exchange rate, P_t, is defined for this proposal as:

$$\frac{\sum_{i=n}^{i=1} E_i}{n},$$

where E_i represents the market exchange rate for the i^{th} day prior to t, and n is the number of days selected for the averaging period. The daily change in the parity exchange rate is,

$$P_t - P_{t-1} = \frac{1}{n}\left(E_{i=1} - E_{i=n+1}\right)$$

England could serve as agent for countries operating in the bullion market, as it now does for the eight-nation Gold Pool. Gold transactions directly between monetary authorities, and between monetary authorities and mining enterprises, would be based on the open market quotations for bullion.

The United States Undersecretary for Monetary Affairs, Mr. Frederick Deming, has pointed out that any new international monetary arrangements must involve a minimum disturbance to financial and exchange markets and that it must not accentuate demands for gold. It cannot be asserted with certainty that introduction of moderated variability in parity exchange rates would not stimulate a demand for gold against dollars, sterling, and other currencies presently used in one or another country's monetary reserves. But if the proposal could be implemented at a period of strength in the balances of payments of the major reserve currency countries, it seems unlikely that any significant flight to gold would result. Viewed in terms of any national currency, the outlook for gold would be that it would drift in value like any other international asset. The restraints on movements in its value would be narrower than those on national currencies. But, on the other hand, gold, earning no interest, would be a long-term investment which could never yield more than 2-3 percent per annum in any currency and which would perhaps yield nothing at all or a loss. Gold would remain costly to handle and could be made even more costly, if that were desired, by one or more devices that would not interfere with the maintenance of gold parities. An agreed tax, for example, on official gold holdings, or on each change in any nation's official gold holdings, would reduce the attractiveness of the metal from the point of view of monetary authorities, who are its chief hoarders. Such a tax, or fee, which might or might not fall on reserve and nonreserve countries alike, could be made payable to an international organization.

Or, as another alternative, the national currency element now in international monetary reserves could be protected simply by transferring such foreign holdings of dollars, sterling, and francs as are in excess of "working balances" to a special account with an international agency where they would be funded into a long-term obligation in favor of the agency. It would be necessary, of course, for the key currency countries to provide a guarantee of the gold value of such assets transferred in order to hedge the agency, and ultimately the agency's account holders, against subsequent changes in gold parity of the key currencies. But international account units so created in favor of present holders of reserve currencies—somewhat similar to the Mutual Currency Account Units that the British have proposed,[4] the Bancor of the Triffin plan,[5] or the Fund Account Units of Robert Roosa's proposal [6]—could, without being gold redeemable, then continue as a more or less permanent element in international monetary reserves.

Private gold hoarding in traditional societies would no doubt continue under a regime of moderated exchange rate variability. But widespread recognition that gold will increase in value at best at a very slow rate should discourage thoughtful private investors, who are certain to have superior earning alternatives, from turning to this asset.

The present proposal does not guarantee any augmentation of the supply of internationally liquid reserves. It does,

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[4] See *Report of the Study Group on the Creation of Reserve Assets*, Report to the Deputies of the Group of Ten (Ossola Report), Washington, D. C.: U. S. Government Printing Office, May 31, 1965.

[5] Robert Triffin, *Gold and the Dollar Crisis*, New Haven: Yale University Press, 1960.

[6] Robert V. Roosa, *Monetary Reform for the World Economy*, New York: Harper & Row, Inc., 1965.

however, provide a mechanism for evidencing the shortage of this medium. Continuing reserve shortages would be indicated by chronic depreciation of a large number of national currencies relative to gold with consequent constriction of the band of free intercurrency exchange rate flexibility. A slowly rising gold price would, of course, itself mitigate the reserve shortage by enlarging the money equivalents of the existing gold stock and by inducing larger annual flows out of the mines. This new elasticity in the gold stock, while salutary, might be too small, nonetheless, to satisfy growth in reserve requirements. In this case, new techniques for reserve supplementation would have to be explored further.

More important than the impact of moderated exchange rate variability on liquidity supplies should be its effect on liquidity demand. For in providing a balance of payments adjustment mechanism which is largely absent under present arrangements, as well as through reducing reserves required against short-term capital disturbances, it should reduce, or in any case slow the growth of, national requirements for internationally acceptable money.

It is not essential that all countries participate in moderated exchange rate variability. As Professor J. H. Williams noted in a classic discussion of currency arrangements prior to Bretton Woods,[7] it is only imperative that firm relations be established between the currencies of the leading commercial nations. With these currencies closely linked, smaller countries without major financial centers might be free to impose exchange controls, attach their currencies to gold or one of the key currencies, or let their exchange rates vary without restraint.

It is essential, however, that the daily parities determined for countries following moderated variability be consistent. To achieve this, in the face of the close connection between currency markets all over the world and the overlapping hours of trading in these markets, requires that official parities based on final market rates reported at a prescribed hour be calculated and announced by an international organization. In order that currency markets be distorted as little as possible by an anticipated parity adjustment during a trading day, it would appear to be desirable to use the 5-hour time span between London and New York as the gap terminating a parity-day. Parities based on closing intercurrency exchange rates and gold prices in London could be announced within an hour or two following the market opening in New York. These parities would be in effect until the next London market closing.

Selection of the width of the band about parity within which gold, and consequently intercurrency, prices are to be maintained, and also of the averaging formula by which parity rates are to be obtained, is a matter for negotiation and perhaps subsequent adjustment. The wider is the band within which market prices for currencies are given complete freedom, the greater is the role assigned to exchange rates in the task of accommodating short-run balance of payments pressures, and the smaller is the requirement for internationally liquid reserves for current trade settlements. A wider band, for any averaging period, will also move the parity rates more quickly. A narrower band, on the other hand, and a longer averaging period for calculating parities, will slow the movement of the parity rates. The important criterion to be kept in mind in selecting these parameters of the system is that the maximum change in the market price of gold and the implied intercurrency exchange rates during any period of time should be such as to make speculation a relatively unremunerative activity. The major feature of the present proposal is that it permits

[7] "Currency Stabilization: The Keynes and White Plans," *Foreign Affairs*, July 1943, pp. 645-658.

some exchange flexibility while keeping rate variations within bounds that make speculation both risky and, at best, not very profitable.

Consider a situation in which the market price of gold in terms of each currency is permitted flexibility within a 1.5 percent range either side of parity, with the parity price calculated as the moving average of the closing market price on the 307 previous days. This 3 percent band width is probably an outside limit for desirable flexibility about a parity price obtained from such a period. It implies a 6 percent band of free variability for exchange rates between national currencies. As indicated above, this formula permits annual variations in the intercurrency parity equivalents of about 6 percent, in view of the fact that the market prices for gold in terms of national currencies may pull continuously in divergent directions. If, now, the market price of one currency in terms of another were below the moving intercurrency parity during a part of the year, and above it subsequently, a lucky speculator purchasing foreign exchange below parity might earn at more than a 6 percent per annum rate on his investment during the period for which he holds the foreign exchange. But insofar as he must hold the currency a full year to obtain the maximum annual rate of capital gain, the best opportunity he could hope for would involve purchase of the foreign money at its lower support price immediately before it rose in value to stay at the upper support level. With this kind of good fortune, the speculator could earn 12.4 percent capital gains for the year,[8] but throughout the period that the value of the foreign currency was at its upper support level, he would be exposed to the risk of losing a good deal more than he subsequently could gain. When a stabilization formula limited gold prices to $\pm$ 1 percent variations, the outside gain a single speculation could yield would be only 8.4 percent. Although it is difficult to generalize about behavior involving risky choices, the notion is appealing that concerted speculation anticipating appreciation or depreciation of a currency would be much less in these circumstances than in the present milieu where investors may shift their liquid assets from one currency to another without risk of significant loss and with more or less well-founded hopes for short-run capital gains running from a few percent to 20, 30, or even 50 percent.

If market exchange rates should vacillate frequently between their upper and lower support levels, speculators who were blessed with a gift for good timing could live well even under a regime of moderated parity variability. But speculative activities in this situation would tend to diminish the very rate fluctuations that potentially yield the dividends. Speculation, free from abrupt changes in the parity exchange rates and oriented to rate movements about existing parities, tends to be of the stabilizing, rather than the destabilizing, variety, as experience with the gold standard and the I.M.F.—during periods when parities have not been in danger—has taught us. Furthermore, should this not be sufficiently the case, it would not be inconsistent with the moderated variability proposal for authorities to limit even the degree of daily market variations by support operations if this were carried out with international understanding and according to rule. It should be noted, however, that intervention to restrict daily exchange rate increments within the outer support boundaries would reduce the savings in liquid reserve requirements the system might otherwise enjoy.

The point to be emphasized is that genuine currency flight of the type that infects present international money markets is a stepchild of abrupt exchange rate variations. It also feeds on apprehensions

[8] Calculated as a gain of 12 percent of the original parity on an investment which is 97 percent of that parity.

concerning the imposition of exchange controls and other measures jeopardizing existing property rights. It seems likely to be greatly reduced in a regime in which exchange rate movements are gradual and exchange controls less necessary.

There are no serious problems connected with an alteration of the width of the support band or the averaging period for determining parities, should the original choices prove unsatisfactory. It is only essential that the alteration be gradual. Lengthening or shortening of the averaging period for calculating daily gold parities would enable future parities to move less or more swiftly. Such a change would predictably affect exchange rate movements for currencies that were at the time under recognizable, persistent pressures at their support levels, but the change would not affect other rates. Gradual alterations in the band within which daily market gold prices or equivalent exchange rates are permitted freedom of movement could also influence exchange rates that were currently at, or very near, their support levels, but they would not affect rates at intra-support levels in a predictable way. Adjustments at a moderate pace would seem to preclude any major speculative distortions of international payments.

The proper functioning of an exchange rate system with the kind of moderated variability described here assumes an absence of official "intervention" in exchange markets so long as market gold prices and exchange rates lie between the support levels, except perhaps for operations according to a prescribed policy to limit the daily increments in market rates. "Market pressures," including of course government operations in the foreign exchange markets not aimed chiefly at influencing the level of the exchange rate, are to play their role of metering and adjusting the delicate balance of foreign exchange receipts and requirements. Purchases or sales to influence the rates at the discretion of public officials, while not disrupting the system, would create possibilities for serious lags in adjustments later. Official purchases, for example, by a government of its own currency to prevent depreciation now would still be retarding depreciation, say, 306 days hence when the need for depreciation might be readily apparent. The preference for market, rather than official, determination of each day's exchange rate rests on the presumption that the market rate, while imperfect, is usually a better predictor of future needs than hopeful official forecasts are. It also takes into account the fact that every country's exchange rate is the reciprocal of one of the exchange rates facing other countries and hence is a matter of international concern.

In a recent, thoughtful defense of the "Band Proposal" calling for some widening of the limits of market exchange rate variability, Professor George Halm advocated measures like Step One of the present proposal but rejected a "movable band," which is the essence of Step Two.[9] His antagonism to a movable band, however, is based on an identification of shifts in the band with the objectionable "adjustable peg" system currently in force under which changes in the parity structure are strikingly discontinuous and inevitably overdue. It must be emphasized that the suggestion to make parity exchange rates continuously variable at moderated rates does not at all resemble the compromise of Bretton Woods.

Moderated variability is also unlike a policy calling for discretionary intervention in exchange markets by an official Exchange Stabilization Fund. More like the gold standard, it is a foreign exchange policy according to "rule" rather than "authority," to use the terminology popularized by University of Chicago econo-

[9] George N. Halm, *The "Band" Proposal: The Limits of Permissible Exchange Rate Variations*, Special Papers in International Economics, No. 6, International Finance Section, Princeton University, January, 1965.

mists. An alteration in a parity rate could not be known for certain until market closing rates for a "parity day" were known and reported; but once market data were reported, calculation of new parities would be as formal and predictable as simple arithmetic.

Planned economies stand to gain as much as free enterprise nations from a system in which exchange rates have some latitude to seek equilibrium levels. Overvalued rates lead to the programming of imports that cannot be financed from the proceeds of export sales in socialist as well as free market economies. This is a common source of plan failure.

A serious objection to making parity exchange rates variable on the basis of a moving average can be raised on the possibility that the lagged adjustment of the parity may put the rate out of phase with certain cyclical disturbances to balances of payments, so that the resulting parities are at some times further from equilibrium levels than rigid rates would be. The answer to this objection is twofold. In the first place, it must be remembered that the moderated variability proposal includes a widened band for free flexibility of intercurrency exchange rates, which can help to accommodate a temporary divergence of the parity from the equilibrium rate resulting from the averaging formula for parity. Second, and still more important, it is to be stressed that the major virtues of the moderated variability proposal are not in the sphere of improved responses to short-term disturbances, although improvements in this area may not be negligible; the virtues are the responses that can be provided to longer term, even permanent, alterations in the world economy, critical adaptations for which there is at present no satisfactory provision. The lag in the adjustment of a moderately variable exchange rate to a fundamental turning point in the structure of international payments could hardly be so long as the lag in price and income adjustments that the system is called upon to endure in the present rigid exchange rate milieu.

While the case for some variability in international exchange rates to relieve domestic income and price policies from balance of payments requirements is strong, this case can be overstated. Professor Halm, for example, says:

> Exchange-rate variations free interest rates from unnecessary interference. The bank rate can now be determined primarily according to the requirements of internal economic policies of the member countries. . . . Regulation of bank rates is one of of the most important instruments of economic policy in market economies. . . . It is most desirable, therefore, that monetary policy should not be deflected from these important tasks by rigid exchange rates and their consequences.[10]

Little note seems to have been taken in the literature on international financial policy of the subservience of the current accounts in the balance of payments to the needs of the capital accounts which this view implies. There is little theoretical argument to support the idea that depreciation of a currency improves the long-term capital account. The current account accommodates the capital account when exchange rates are free, while the latter is in turn motivated by interest rate differentials, changing notions of risk, and a congerie of other factors little understood.

Short-term capital movements, it is true, may be motivated by exchange rate adjustments when these adjustments are within a limited band about fixed or reasonably predictable parity rates. For these capital transfers can be stimulated by expectations of short-term capital gain as exchange rates approach their support levels and take on the property of having variability in only one direction. But the whole effect of variations of less tightly bounded exchange rates on longer term investments is less predictable. Fixed interest bearing investments at home and

[10] *Ibid.*, p. 51.

abroad, for example, retain the same degrees of attractiveness after a possibly permanent exchange rate adjustment that they had before; and an exchange rate movement gives, in general, no clue to the future interest rate policies governments may follow. Investment in ownership of foreign enterprises may be stimulated by a depreciation of the investor country's currency if the foreign enterprises involved are importing from the depreciating country. But investments of the ownership sort will be retarded by the same depreciation in respect of enterprises designed to compete with the depreciating country's goods.

National interest rate levels are undoubtedly significant in some degree as an influence on domestic spending. They are also significant as an influence on international capital flows. The view that interest levels should be manipulated solely or primarily with a view to the intensification or dampening of domestic spending, leaving the international exchange rate and the current international accounts to adapt to resulting international capital flows, lays aside the national welfare implications of foreign investment. In fact, interest rate levels should be oriented toward achieving a desirable net international flow of capital as well as a desirable level of home spending.

But if exchange rate variability does not after all free domestic interest rate policy, is an effort to achieve it in a viable manner worth the candle? This question should be answered "Yes." For interest rate levels are but one lever in the national economic control room, and both Meade and Tinbergen have taught us that the simultaneous achievement of multiple policy goals requires the employment of multiple policy instruments.[11] Rigid parity exchange rates deny nations one such instrument for achieving balance of payments equilibrium in conjuncton with full employment, stable prices, and a desired level of international lending. Where the balance of current international transactions is safeguarded by exchange rate flexibility, on the other hand, various combinations of fiscal, debt-management, monetary, and wage and price policies can usually nudge economic activity one way or another without stimulating unwanted international capital transfers through interest rate incentives.

An additional and important objection can be raised to exchange rate variation on grounds that political progress in the 1960's requires closer integration of the leading financial markets, not disintegration. Variability in exchange rates permits a degree of national autonomy in domestic policies which those favoring closer economic and political union deplore. Furthermore, it is said to discourage those international exchanges of capital that enable asset holders in various countries to balance their portfolios better,[12] or which, in complementing low-waged labor, can help to obtain equal prosperity in the long run for workers in all parts of the international community.

The reply to this objection is that exchange variability is a desirable condition so long, and only so long, as national autonomy in relation to major economic policies is the accepted cosmopolitan norm. It will become redundant when the vigorous sense of national government responsibility for economic welfare that characterizes the present scene subsides. When national instruments of economic power have come under the dominance of supra-national agencies capable of imposing cosmopolitan economic poli-

[11] James E. Meade, *The Theory of International Economic Policy*, London: Oxford University Press, Vol. I, *The Balance of Payments* (1951); and Jan Tinbergen, *On the Theory of Economic Policy*, Amsterdam: North-Holland Publishing Co., 1952.

[12] See the extremely interesting paper by Charles P. Kindleberger, *Balance-of-Payments Deficits and the International Market for Liquidity*, Princeton University *Essays in International Finance*, No. 46, May, 1965.

cies, or even dependably coordinating the policies of national governments, a chief source of international economic disequilibrium will have disappeared. Then exchange flexibility, the urgency of which in the present is its contribution to balance of payments adjustment, can readily be foregone.

In the interim, moderated exchange rate variability provides a means of slowly but surely adapting prices in accordance with the market tensions created by disparate economic goals and achievements among nations. It permits markets to do the task they can do best: guide and motivate the use of growing productive capability in accordance with long-term changes in human needs. Even long-term international investments, so long as they are equity investments, need not be disturbed by exchange rate variability to the degree that such variability predominantly reflects changing monetary and productivity conditions in various countries. For the exchange variability takes on the role of an offset to what otherwise would be capital gains or losses arising from forces outside an investor's control.

Present currency arrangements fail in the important function of inducing adjustments to evolutionary disturbances. Deficit countries cite "Keynesian wisdom" in eschewing deflation and waiting upon inflation in the surplus countries to correct payments imbalances. But surplus countries often turn to important canons of "sound finance" and restrain their inflations. In the hiatus, temporary disequilibria become chronic, prudent investors remove their funds from weak to strong currencies, governments make a last-ditch defense of existing exchange rates through trade and payments restrictions but find that these only intensify the speculative fever until, in a suspenseful weekend, exchange rates are altered and the process begins anew. Moderated, continuous exchange rate variability offers an opportunity to bring consistency to old and new policy "truths" and an end to the capital flows that recurrently threaten continuance of the present structure of free markets.

► SAM PELTZMAN

Bank Entry Regulation: Its Impact and Purpose

I. *Introduction*

With the passage of the Banking Act of 1935, the legal conditions governing bank entry became more restrictive than they had been at any time in the preceding century. Largely responsible for this changed legal environment was the widely held belief that "over-banking" and "over-chartering" were at least partially responsible for the collapse of the banking system in the 1930's.[1]

In 1863, Congress granted the Comptroller of the Currency, the newly established chartering agent for national banks, discretionary authority to deny applications for national bank charters.[2] By 1932, all of the states had granted the same authority over state bank charter applications to a banking commission or commissioner.[3] Although many charter applications were rejected, until 1935 this discretionary authority was largely in-

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The author is indebted to Professors George Stigler, Milton Friedman, and Lester Telser of the University of Chicago for their criticisms and advice. The conclusions and remaining errors are, however, solely the author's responsibility.

[1] For examples of this viewpoint see the works cited in David A. Alhadeff, "A Reconsideration of Restrictions on Bank Entry," *Quarterly Journal of Economics*, LXXVI, 1962, p. 247 n.

[2] The relevant statutory provision is 12 U.S.C. 27.

[3] See "The Dual Banking System in the United States," Federal Reserve System Committee on Branch, Group and Chain Banking Materials, I (1932), p. 145.

effective, because neither chartering authority, state or national, had a check on the other. This encouraged a competition for charters which assured the continuance of what was essentially "free banking" up to 1935. An attempt by the Comptroller to use his discretionary power was very likely to result in the grant of a state charter to the spurned applicant, and vice versa. As a result, neither authority, state or national, was anxious to use the discretionary authority given them by law.[4] Therefore, an end to "free banking" and "over-chartering" required an end to this legal environment permitting charter competition. This is precisely what the Banking Act of 1935 accomplished.

The Banking Act of 1935, *inter alia*, requires the Federal Reserve (for newly admitted state member banks), and the Comptroller (for newly organized national banks), to certify to the Federal Deposit Insurance Corporation that the following factors have been considered:

> . . . The financial history and condition of the bank, the adequacy of its capital structure, its future earning prospects, the convenience and needs of the community to be served by the bank. . . .[5]

Moreover, the Act imposes the same requirement on the FDIC before it may insure a new nonmember state bank.[6] Administrative decisions by the FDIC and the other Federal agencies based on this "needs" criterion are nonreviewable. Thus, because of the attractiveness of deposit insurance, the Federal government was given effective control of the bank chartering policies of the individual states. Today, the only charters not requiring Federal approval are those for state nonmember, noninsured banks, a group that is small from the standpoint of both numbers and new entry.[7]

By granting the Federal government this veto power over state chartering policies, the Banking Act of 1935 ended the legal arrangements permitting charter competition and essentially free entry into banking. It remains an empirical question, however, whether and to what extent this changed *legal* environment affected *actual* bank entry. Mere citation of the relevant statutes cannot answer such a question. This article seeks to measure the impact of the statutory change in 1935 on entry into banking, so as to answer the question: Has the 1935 Act served to limit new bank entry significantly, and if so, by how much?

Perhaps the simplest way of answering such a question would be to count the charter applications rejected by the authorities and compare this with the number accepted. We will, however, reject such a procedure, because the resulting estimate of regulatory effectiveness would be biased in two different, but not necessarily offsetting, directions. Several charter applications may come before the authorities, each proposing a new bank in a particular area, and all of them may be rejected (until, perhaps, one applicant group satisfies the authorities). However, it may well be that no subsequent appli-

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[4] The results of this charter competition are described in "The Dual Banking System in the United States," *op. cit.*, pp. 2, 47ff., 85, 96, 97ff., 122ff. Competition between state and national chartering authorities also extended to changes in the law itself; the Comptroller, for example, responded to low state minimu n capital requirements by (successfully) urging Congress to lower national capital requirements.

[5] Banking Act of 1935, Sec. 101. The relevant statutory provision is 12 U.S.C. 1814(b), 1815, 1816.

[6] 12 U.S.C. 1815, 1816. National and state member banks are automatically insured upon certification by the Comptroller of the Currency or the Federal Reserve.

[7] On December 31, 1962, 308 out of a total of 13,427 commercial banks were noninsured. Of the 2,260 new banks formed from 1935 through 1962, 332 entered as noninsured banks (62 of these entering in 1936-38). *Annual Report*, Board of Governors of the Federal Reserve System, 1936-62 issues.

cation would have been made had one application been approved. Simply counting all of these rejected applications would overstate the effect of regulation in this case—regulation has resulted in only one fewer bank (or none, if somebody is eventually successful) than otherwise would have been formed. On the other hand, the existence of what is in fact, or is widely believed to be, a restrictive chartering policy may discourage some potential applicant groups from incurring the costs of filing for a charter. Simply counting rejected applications would for this reason understate the effect of regulation on this account.

Because of these biases in the data on the disposition of charter applications, we will measure the effect of regulation on entry indirectly. First, a model relating entry to economic variables will be constructed, and its parameters will be estimated for a period not subject to entry regulation (pre-1935) and for a period after the onset of regulation (post-1935). After accounting for the separate effects of these economic variables in the post-1935 period, any remaining significant difference in the rate of new entry post-1935 as compared to pre-1935 will be attributed to the effect of regulation.[8] Section II presents a model for new bank entry, and Section III estimates its parameters and provides an estimate of the effect of regulation on new entry. The major conclusion is that the 1935 statutory change has had a statistically significant and numerically large impact on new bank entry. Section IV discusses the policy question raised by this finding: What is the purpose of restricting bank entry? Section V examines some recent developments in bank entry and their implications for the future.

[8] This method has been employed in a recent study of the effects of regulation on electric utility rates. See George Stigler and Claire Friedland, "What Can Regulators Regulate? The Case of Electricity," *Journal of Law and Economics*, V, (1962), pp. 1-16.

II. *A Model of New Bank Entry*

The decision to form a new bank is essentially a decision to invest capital in a specific form in the banking industry. Therefore, we shall treat entry in banking as part of the more general phenomenon of capital investment in banking. The link betwen entry and capital investment may be shown as follows: Let

$$(1) \qquad B = \frac{C}{S}$$

where

B = number of banks
C = capital stock in banking [9]
S = average capital size per bank.

The logarithmic form of (1) is

$$(2) \qquad \ln B = \ln C - \ln S,$$

which, when differentiated with respect to time, yields

$$(3) \quad \left(\frac{1}{B}\frac{dB}{dt}\right) = \left(\frac{1}{C}\frac{dC}{dt}\right) - \left(\frac{1}{S}\frac{dS}{dt}\right)$$

This breaks up the net percentage change in the number of banks per unit of time into the percentage change in the stock of capital—the rate of capital investment—and the percentage change in the capital size per bank. Since we are concerned with new entry, we may further divide the net percentage change in the number of banks into components:

$$(4) \quad \left(\frac{1}{B}\frac{dB}{dt}\right) = E_t - M_t - X_t, \text{ or}$$

$$E_t = \left(\frac{1}{B}\frac{dB}{dt}\right) + M_t + X_t$$

where

E_t = rate of new bank formations
M_t = rate of bank mergers
X_t = rate of bank failures.

[9] Since entrepreneurial capital in banking has historically been almost exclusively equity capital, the term "capital" will mean equity capital wherever it is used here.

These rates are the number of banks entering, merging and failing per unit of time, each divided by the existing total number of banks. On substituting the right-hand side of (3) for $\left(\frac{1}{B}\frac{dB}{dt}\right)$ in (4), we get:

$$(5) \quad E_t = \left(\frac{1}{C}\frac{dC}{dt}\right) - \left(\frac{1}{S}\frac{dS}{dt}\right) + M_t + X_t.$$

Thus, with the addition of mergers and failures to the right-hand side of (3), entry, like the net change in the number of banks, depends on the rate of capital investment in banking and the rate of change of bank capital size. These two determinants are discussed in turn.

A. Capital Investment

The fact that capital is being invested (or withdrawn) from an industry implies some dissatisfaction on the part of entrepreneurs with the present stock of capital. Thus, we may view capital investment as redressing a discrepancy between some desired stock of capital in an industry and the presently existing stock; where the former exceeds the latter capital will be invested, where it falls short capital will be withdrawn from an industry. We may express this relationship as follows:

$$(6) \left(\frac{1}{C}\frac{dC}{dt}\right)^{*} = f(\ln C^{*} - \ln C).$$

Here we make the intended percentage change in the stock of capital per unit of time $\left[\left(\frac{1}{C}\frac{dC}{dt}\right)^{*}\right]$ equal to some function of the percentage by which the desired stock of capital (C^{*}) exceeds the actual stock.[10] Further, let the desired stock of capital (or its logarithm) that entrepreneurs wish to have committed to banking be a (positive) function of the expected rate of return on capital in banking (π); this is expressed as:

$$(7) \qquad \ln C^{*} = g(\pi, \ldots).$$

(The ellipses represent other determinants of the desired stock which are omitted from the discussion at present.) On substituting (7) into (6), we may rewrite (6) as:

$$(8) \left(\frac{1}{C}\frac{dC}{dt}\right)^{*} = h(\pi, \ln C, \ldots),$$

where the partial derivative of h is positive with respect to π, negative with respect to ln C. To complete this model, we must fill in the ellipses in (7) by specifying what factors other than expected profits determine the desired stock of capital in banking.

While a complete specification of "other" factors is obviously impossible, two such factors are singled out for inclusion here.

1. Deposits. The basic role of capital in banking is to provide insurance to depositors against losses due to a decline in the value of bank assets. Since the sum of capital and deposits differs from a bank's assets by only minor items, the ratio of capital to deposits is a measure of the extent to which the value of a bank's assets can fall before depositors incur losses and the bank becomes insolvent. Thus, everything else the same, the greater a bank's deposits become, the more capital it will wish to have to maintain its level of insurance against a de-

[10] We express this percentage discrepancy as a difference of natural logs. A fuller discussion of the theory underlying capital investment models of this general type may be found in Milton Friedman, *Price Theory: A Provisional Text*. Chicago: Aldine, 1962, pp. 244ff. This theoretical framework has been successfully exploited by A. J. Meigs in his *Free Reserves and the Money Supply*, Chicago: University of Chicago Press, 1962, see especially chapter IV. A more complete discussion of the application of this theory to the bank entry problem may be found in the author's "Entry in Commercial Banking," *Journal of Law and Economics* (forthcoming).

cline in asset values. Since a bank's cash assets cannot decline in value, however, any deposits matched by cash assets require no further protection in the form of capital. Therefore, the variable that is relevant for inclusion as a determinant of the desired stock of capital is deposits net of cash assets.[11]

2. *Risk of Capital Loss.* A good operational expression for the expected rate of return in banking must include the risk of capital loss due to a firm's failure. However, most rate-of-return measures reflect, in large part, the results of successful firms. For example, in this article, we will derive a measure of expected profits from a bank-stock price index. Should a bank included in such an index fail, it would be replaced to preserve continuity of the index. A stock price index is thus, by its nature, an index of the prices of securities of successful firms only. Clearly, any expected rate of return we get from such an index will not fully reflect the risk of capital loss due to failure, and we thus need an independent estimate of this risk. It should be noted that, even if we had followed the conventional practice of setting the expected rate of return equal to the currently observed rate of return, we would still need to adjust for the risk of failure. An appropriate rate of return measure would deduct the annual rate of loss for failing firms from the annual returns of successful firms. However, observed current profits figures deduct losses of failing firms only up to the date of their failure.

In the empirical work, the risk of failure will be taken to be a function of the actual rate of failure of existing banks. This would appear reasonable on two counts: First, a high rate of failure of existing banks should reflect market conditions, making failure more probable for currently established (or establishing) institutions; second, the tendency for bank failures to cause a "run" on existing institutions is stronger the more general are bank failures.

a. An Operational Definition of "Expected Rate of Return." Grunfeld, in his study of the determinants of corporate investment,[12] challenged the assumption that currently realized rates of return provide the best observable measure of expected rates of return. This was the assumption made in almost all empirical investment studies prior to his, and realized profits frequently provided a "good" fit to the data. However, Grunfeld claimed that this good performance of current profits derived from its acting as a surrogate variable, i.e., one which tends to be highly correlated with a more direct measure of expected profits. Grunfeld identified the "more direct measure" of a firm's expected profits with the *market value of the firm*—the price investors place on claims to the future earnings of the firm. This price is, after all, the acid test of what investors expect future profits to be, and to the extent that a change in current profits is permanent it should be reflected in a change in the market value of the firm. To the extent that a change in current profits is only temporary, it should have no effect on either the market value of the firm or its investment decisions. Indeed, Grunfeld's empirical research indicated that market values explained the investment behavior of firms better than did current profits. Our operational definition of "expected rate of return" will also be drawn from stock market values rather than current profits.

The procedure by which an expected rate of return may be inferred from stock

[11] Hereafter, the terms "deposits" and "deposits net of cash assets" will be used interchangeably.

[12] Yehuda Grunfeld, "The Determinants of Corporate Investment," in A. Harberger (ed.), *The Demand for Durable Goods*, Chicago: University of Chicago Press, 1960.

market values is as follows: For simplicity, assume that the claims to the future earnings of Company X are represented by one share of common stock. This share has a market value of (V) given by the conventional discount formula:

$$(9) \qquad V = \sum_{i=1}^{\infty} \frac{R_i}{(1+r)^i}$$

where the R_i are expected dollar earnings in year i, and r is an appropriate discount rate. (9) may be simplified by choosing an average annual dollar amount of earnings ($\overline{R}$) such that, when substituted for each of the R_i in (9), the same V would be obtained. (9) would then become:

$$(10) \qquad V = \frac{\overline{R}}{r}, \text{ or } \overline{R} = r\,V.$$

$\overline{R}$ is not itself directly observable, but must be inferred from observable stock market values and interest rates. In order to abstract from risk considerations, we will set r equal to the long-term default-free rate of interest, and obtain a "certainty equivalent" $\overline{R}$ by multiplying V by this interest rate. The term "certainty equivalent," as used here, simply means that a share in Company X may be exchanged for a bond promising to pay $\overline{R}$ per year for certain indefinitely; and if investors expected the future earnings of Company X, after allowance for risk, to be something other than $\overline{R}$ per year, the value of the stock or the default-free interest rate, or both, would have to change to maintain equilibrium in the bond and stock markets.

To convert the expected annual dollar earnings yielded by multiplying the market value by an interest rate to an expected annual rate of return (π), it is necessary to divide the expression for R by an appropriate capital base (C_o), which should be the capital required to duplicate the firm. Thus:

$$(11) \qquad \pi = \frac{\overline{R}}{C_o} = r\left(\frac{V}{C_o}\right)$$

In the empirical estimates that we shall make of π, C_o will be set equal to invested capital at book value. The usual defects of book value as a measure of replacement value are perhaps less glaring for banks where capital is invested mainly in earning assets with fixed maturity values. Even for banks, however, past interest rate changes not reflected in loan book values, overstatement of loan loss reserves and of depreciation on owned real estate due to tax incentives, etc. will introduce discrepancies between book and replacement values. The practical difficulties of adjusting book values for such factors, however, rule out any alternative. Our empirical estimate of π, then, will be the default-free interest rate times a ratio of market to book value for banks.

B. Entry and Size Changes

In equation (5), both the rate of capital investment and the rate of change of firm capital size affect the entry rate. We have so far discussed only the determinants of the former; we now take up the determinants of the latter.

If, as some recent studies of the subject indicate,[13] unit costs in banking are relatively constant over a wide range of bank sizes, rates of change of bank size will be to some extent indeterminate. A given rate of investment could be accompanied by an equal rate of increase, a less than proportional increase, or even a decline in firm size. This indeterminacy in the optimal size of firm is a limitation on our attempt to link entry and capital investment. However, some factors systematically associated with intended changes in the average capital size of banks may still be singled out.

[13] See, Irving Schweiger and John S. McGee, "Chicago Banking," *Journal of Business*, XXXIV, (1961), pp. 325-329; and Lyle E. Gramley, *A Study of Scale Economies in Banking*, Kansas City, Mo.: Federal Reserve Bank of Kansas City, 1962.

Suppose that there is an increase in the size at which a bank's cost curve becomes flat. This will cause some previously efficient banks to become inefficient. Such firms will want to grow more rapidly than the average to attain the new minimum efficient size, or they will wish to leave the industry. Either action will lead to an increase in the average size of banks.[14] One important way in which some firms can grow faster than the average is by acquiring other firms; similarly, one way in which a firm may leave the industry is by selling out to another firm. So, any increase in scale economies should be reflected in an increased rate of merger among existing banks. Since the extension of scale economies will cause the intended size of firm to increase, the merger rate should be a good proxy for the intended rate of change of firm size.

III. *Empirical Estimates*

The model developed in the preceding section may be summarized by the following equations:

$$(5)'\ E_t^* = \left(\frac{1}{C}\frac{dC}{dt}\right)^* - \left(\frac{1}{S}\frac{dS}{dt}\right)^* + M_t + X_t$$

(The asterisks denote intended values.)

$$(8)'\left(\frac{1}{C}\frac{dC}{dt}\right)^* = h\,(\pi, \ln C, D, \mu, u)$$

We replace the ellipses of (7) and (8) with deposits (D), risk of loss (μ), and a random-error term (u).

$$(12)\ E^* = h\,(\pi, \ln C, D, \mu, u) - \left(\frac{1}{S}\frac{dS}{dt}\right)^* + M_t + X_t$$

This substitutes (8)′ into (5)′.

[14] The same is true for entrants. An extension of scale economies will discourage those firms which had intended to enter at the previous minimum efficient size from doing so. They will increase their entering capital or drop out. The net result will be fewer and larger entering firms.

Since (12) is written in continuous form, and the data we shall use are measured over time intervals, we introduce the following discrete approximations to the variables in (12):

e_t = number of new commercial banks formed in year t, as percent of the number of banks existing in year t; this will approximate E_t.

m_t = number of banks merging in year t, as percent of the number of existing banks in year t; this will approximate M_t.

x_t = number of banks failing and liquidating, net of reopenings, in year t, as percent of number of existing banks in year t. This will approximate X_t.

π_t = expected rate of return on capital in banking, year t—rate of interest times ratio of market to book value for banks in year t.

D_t = deposits, net of cash assets, year t.

C_t = capital invested in banking, year t.

μ_t = risk of capital loss in year t.

$\left(\frac{\Delta S}{S}\right)_t$ = intended percentage change in capital size per bank in year t; this will represent $\left(\frac{1}{S}\frac{dS}{dt}\right)^*$

u_t = a random-error term.

To make the model operational, we assume equality of intended and actual changes except for the influence of regulation, whose effects are accounted for separately. (12) is estimated by combining the discrete approximations above in a linear model of the form:

$$(13)\ e_t = \alpha_1 + \beta_1 \ln \pi_t + \beta_2 \ln D_t + \beta_3 \ln C_t + \beta_4 \mu_t + \beta_5 \left(\frac{\Delta S}{S}\right)_t + m_t + x_t + \beta_6 R_t + u_t.$$

Here we add a term, R_t, to stand for the effects of regulation. Since we date the onset of effective regulation of entry at the Banking Act of 1935, R_t will be a dummy variable taking on the value zero

for years prior to 1935, and unity for the years from 1936 to the present.

In the previous section, we held the risk of capital loss to be related to the current rate of failure, and intended size change was held to be related to the merger rate. We express these relationships in linear form:

$$(14) \qquad \mu_t = \alpha_2 + \beta_7 x_t$$

$$(15) \qquad \left(\frac{\Delta S}{S}\right)_t = \alpha_3 + \beta_8 m_t$$

Substituting (14) and (15) back into (13), (13) becomes:

$$(16) \quad e_t = \alpha_1 + \beta_1 \ln \pi_t + \beta_2 \ln D_t + \beta_3 \ln C_t + \beta_4 (\alpha_2 + \beta_7 x_t) + \beta_5 (\alpha_3 + \beta_8 m_t) + m_t + x_t + \beta_6 R_t + u_t$$

or,

$$e_t = (\alpha_1 + \alpha_2 \beta_4 + \alpha_3 \beta_5) + \beta_1 \ln \pi_t + \beta_2 \ln D_t + \beta_3 \ln C_t + (1 + \beta_4 \beta_7) x_t + (1 + \beta_5 \beta_8) m_t + \beta_6 R_t + u_t$$

The expected values of the coefficients, other than the constant term, are as follows:

$\beta_1 > 0$
$\beta_2 > 0$
$\beta_3 < 0$
$\beta_4 < 0$
$\beta_5 = -1$
$\beta_6 \leqslant 0$
$\beta_7 > 0$, so $\beta_4 \beta_7 < 0$, or $(1 + \beta_4 \beta_7) < 1$
$\beta_8 > 0$, so $\beta_5 \beta_8 < 0$, or $(1 + \beta_5 \beta_8) < 1$.

Equation (16) was estimated by method of least squares using aggregate annual data for the United States, 1921-62. The resulting estimate was:

$$(17) \quad e_t = .234 + \underset{(.241)}{1.868} \log \pi_{t-1} - \underset{(.017)}{.047} x_t - \underset{(.064)}{.231} m_t + \underset{(.267)}{.619} \log D_t - \underset{(.487)}{1.097} \log C_t - \underset{(.117)}{.579} R_t$$

coefficient of determination = .871
standard error of estimate = .153 [15]

The variables included in our model explain most of the variance in the entry rate, and all of the regression coefficients are significantly different from zero in the expected direction.[16] Of particular importance is the regression coefficient of the dummy variable. It is not only significantly negative, being nearly five times its standard error, but represents a numerically large effect as well. The coefficient of R_t gives the average percentage point reduction in the entry rate, *ceteris paribus*, in 1936-62 compared to 1921-35. This figure, .579 percent per year, compares with an average entry rate of .766 percent per year for the whole 1921-62 period and .605 percent per year for 1936-62. So, the coefficient of R_t nearly equals, in absolute value, the average of the entry rate since 1935. A 95 percent confidence interval for the coefficient of R_t is $-.813$ to $-.345$, so even the lower (absolute) bound estimate of the coefficient is more than half of the observed average of the rate of entry since 1935. To the extent that the effect caught by R_t is attributable to regulation (see below), we may therefore state that in the absence of regulation, the entry rate would have been between 50 and over 100 percent greater

[15] All ratios are in percentage points, all dollar magnitudes are in billions of dollars, and "log" indicates common logarithms. Standard errors are in parentheses below the regression coefficients. The profit rate is lagged one year to avoid difficulties in interpretation due to possible mutual dependency of the profit rate and the entry rate. Data are taken from my "Entry in Commercial Banking," *Journal of Law and Economics*, (forthcoming).

[16] The appropriate significance test for the coefficients of the merger and failure rates is for a significant difference from unity; both coefficients pass this test. A fuller discussion of various regression estimates of the model presented here may be found in my article cited above.

than the rate actually observed since 1935.

The coefficient of the dummy variable might be overstating the effect of regulation, and we wish to check this possibility. In particular, collinearity of the dummy variable with other independent variables might cause the effect attributable to those variables to be "spread" to the dummy variable. There are two cases in which collinearity with other variables might cause the coefficient of R_t to overstate the effect of regulation: If the coefficient of a variable other than R_t is positive and there is a permanent negative shift in the level of that variable (negative collinearity with R_t), then the coefficient of R_t may be catching part of the entry depressing effect of this shift; the same effect on R_t can be produced by a positive shift in a variable with a negative coefficient. A case related to these two concerns the presence of variables with secular trends, since all variables with secular trends will be collinear with the dummy variable. The coefficient of the latter will be biased if it is catching effects attributable to variables with secular trend.

This last possibility was checked first by simply deleting the two variables with pronounced secular trends—deposits and capital—from the regression. If their presence caused the coefficient of R_t to be biased, their deletion should cause that coefficient to change significantly. However, after deleting deposits and capital, the coefficient of R_t turns out to be $-.576$ with a standard error of .071—virtually identical to its value in (17). The dummy variable is negatively correlated with the merger rate,[17] but the coefficient of the merger rate is itself negative. Any bias in the coefficient of R_t on this account is toward zero—everything else the same, a downward shift in the merger rate should cause a rise in the entry rate. Similarly, the expected rate of return, after adjusting for the risk of capital loss, is greater post-1935 than previously,[18] and any tendency for the effect of this to be caught by the dummy variable would also bias its coefficient toward zero. Thus, none of the variables in the model serve to bias the coefficient of R_t downward; if anything, the bias is in the other direction, toward an understatement of the effects of regulation.[19]

[17] The simple correlation coefficient is $-.423$.

[18] Risk of capital loss was adjusted for by setting the expected risk of failure equal to the actual rate of failure. On the assumption that a failure meant total loss of capital, this risk of failure was deducted from the expected profit rate of successful firms to get a risk-adjusted profit rate—for example, if successful firms could expect to earn 10 percent per year while 3 percent of all firms failed and lost all their capital, the expected rate of return would be 7 percent. This procedure, the series it generated, and its implications for the regression results are discussed in detail in my "Entry in Commercial Banking," *supra* footnote 10. It is argued there that, in fact, the actual rate of failure understates the expected losses as seen by investors (for one thing, bank stockholders were subject to double liability on the par value of their shares before 1935), and that the very pronounced decline in the risk of capital loss since 1935 causes an upward bias in the coefficient of R_t—i.e., causes that coefficient to understate the effects of regulation.

[19] There is always the possibility, which can never be systematically tested, that the model itself is misspecified—that it leaves out certain variables not associated with regulation, but which would have caused the entry rate to decline subsequent to 1935—and that the dummy variable is simply a proxy variable for such "left-out" variables. One candidate for such a "left-out" variable that was investigated is worth mentioning—this is the rate of new branch formation (the number of new branch offices opened in a year divided by the existing number of bank offices). Branching may be a substitute for new banks, and branches have grown rapidly since 1935. To the extent that this growth has not been induced by entry restriction, the decline in new entry may simply reflect the growth of the branch-substitute. However, when the rate of new branch formation was entered separately in the regres-

IV. *The Purpose of Bank Entry Restriction*

This discussion of the rationale for bank entry restriction is set within the context of our estimate of its importance provided in the preceding section. Had the measurable effect of bank entry restriction been negligible, its place as an issue of public policy would rank with health and safety laws, state incorporation statutes, and similar minor legal obstacles to entry. It turns out, however, that the Banking Act of 1935 has been more than a minor obstacle to bank entry. It has cut the rate of entry by a third to half below what it otherwise would have been, and it is this order of magnitude that justifies special treatment of this particular restriction.

This great degree of restriction would also seem to require some special justification in light of the importance usually attached to free entry in economics textbooks. Virtually all textbook descriptions of the adjustment of competitive markets to disequilibria will single out entry (and exit) as an important way in which resources are allocated to their most valuable uses, and the optimizing properties of competition depend critically on the existence of free entry. Given this presumption in favor of free entry, only some special circumstances of the banking industry could justify a public policy restricting entry into banking.

The prime justification for bank entry restriction becomes clear by noting the date of its adoption—1935; it was designed to prevent a repetition of the collapse of the banking system such as had taken place in the early 1930's. Under a regime of free entry in banking, as elsewhere, some firms will fail. However, a high failure rate in banking had undesirable secondary effects peculiar to a fractional reserve banking system. It could, as in the early 1930's, lead to general "runs" on surviving banks which, in its turn, could lead to monetary contraction and, finally, a contraction in business activity. Bank entry restriction was designed to halt this cumulative process at its inception, by insuring against a high rate of failure.[20] Entry restriction is supposed to accomplish this in two ways. First, it weeds out those applicants who value their own chances more highly than do the regulators—i.e., those particular applicants whom the regulators believe are likely to fail. Second, it reduces interbank competition generally. In this way, it is hoped, the whole distribution of profit rates in banking will be greater than it would be under free entry, and fewer banks will incur losses that cause them to fail.[21]

The most curious aspect about this justification for bank entry restriction is that the very Act that instituted the restriction created another institution designed in part to accomplish the same ends as entry restriction—Federal deposit insurance. Deposit insurance by itself cannot, of course, prevent bank failures. It does, however, eliminate the primary factor causing failures to cumulate into "runs"—fear on the part of depositors over the value of the bank assets backing their deposits. Once the value of deposits is insured against any decline in the value of bank assets, runs on the system in response to some bank failures become highly unlikely. In this way, the undesirable secondary consequences of bank

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sion, its coefficient was insignificant while that of the dummy variable remained significantly negative.

[20] For a discussion of this point, see D. Alhadeff, *op. cit.*, pp. 260ff. Alhadeff is critical of the failure by some proponents of entry restriction to distinguish between the direct losses of an individual bank failure and the secondary consequences of extensive failures. It is these secondary consequences that make failures a concern of public policy.

[21] See Alhadeff, *op. cit.*, pp. 252-60.

failures are avoided. Since entry restriction in no way adds to the protection afforded insured depositors, it is difficult to see how it adds to the safety of the banking system, and its primary justification would appear to be open to serious question. Of course, not all deposits are insured, and the risk of a bank failure is still relevant to noninsured depositors. However, any problems this raises could be most directly met by extended or universal deposit insurance, rather than by entry restriction.

Some writers, having recognized that the use of entry restriction as a guardian against the consequences of bank failures has been made redundant by deposit insurance, have sought other grounds to justify it. One such ground arises out of the alleged subsidy to high risk lending inherent in a system of widespread deposit insurance. The point is made succinctly by Professor Jacobs in a recent article in this *Review*:

> With deposit insurance, the majority of depositors can be largely indifferent to the strength of a bank's capital and management. However, without some controls, under deposit insurance a strong incentive would exist for persons with high risk preferences to go into the banking business. As bankers, they could operate with very high leverage, that is, with low capital-to-asset ratios. With a small amount of capital they could undertake high risks and, therefore, high-yield lending opportunities. If the loans paid off, they would receive handsome rewards. If losses occurred, they would lose the small amount of capital invested; but most of the loss would be borne by the insuring agency.[22]

This type of argument implies that the existence of deposit insurance would attract too many entrants into banking. It states that, under deposit insurance, depositors need not be compensated for the risk of loss due to an excess of defaulted loans over a bank's capital. Thus, capital invested in banking, in effect, receives a subsidy equal to what banks would otherwise have to pay, explicitly or implicitly, to depositors to compensate for this risk; this makes the expected rate of return on capital in banking greater than the social rate of return by the amount of the subsidy. With free entry, this expected return would be competed down to the level in other industries, but this would cause the social rate of return on capital in banking to be below that which prevailed elsewhere. In this way, free entry with widespread deposit insurance would result in too many entrants being attracted to banking; they would be attracted by the risk-subsidy inherent in deposit insurance. To keep the social rate of return in banking equal to that elsewhere, entry would have to be restricted.[23]

Entry control is, however, an inefficient way to deal with this type of problem; it counteracts the subsidy inherent in deposit insurance at the cost of restricting competition generally. The problems raised by this subsidy can be met most simply by eliminating it. This would require a change in the present fee system for deposit insurance (in which the fee is a flat percentage of deposits). If the fee were made a function of past loan losses or of the net profitability of the loan portfolio, the subsidy to risk-taking could be eliminated. A banker contemplating the reallocation of assets to loans with a higher probability of default would

[22] Donald Jacobs, "The Framework of Commercial Bank Regulation: An Appraisal," *The National Banking Review*, 1, March, 1964, p. 345.

[23] Jacobs refers to controls—though not entry controls—as necessary to "protect the solvency of the insurance fund"; its solvency is presumably jeopardized by excessive risk-taking by banks. Since the efficacy of deposit insurance in preventing liquidity crises rests ultimately on the FDIC's access to the printing press, solvency of the insurance fund is a side issue. The main issue is the desirability of the presumed risk-subsidy under deposit insurance.

also have to contemplate higher insurance fees. Since the risk of loss to depositors, and hence expected payments out of the insurance fund, vary with capital-asset ratios, the fee could also be made to vary with such ratios. A deposit insurance fee system so designed could deal with the risk-subsidy inherent in the present fee system and avoid the costs of a general restriction of competition under entry control.

It should be noted that bank regulators attempt to deal with the incentives arising out of the present insurance system by informal regulation of capital-asset ratios and the risk composition of bank asset portfolios. To the extent that this eliminates the risk-subsidy inherent in deposit insurance (by preventing use of the subsidy), entry control is again made redundant—if bankers cannot use the subsidy, it would not attract too many entrants to banking, and entry restriction becomes pointless. Whatever method is used to deal with the risk-subsidy—preventing its use by capital and asset regulation, or reabsorbing it in the deposit insurance fee—the efficacy of that method is in no way lessened by free entry.

This last point is just as applicable to an important variant of the risk-subsidy argument—one that holds that new banks as a class are riskier than established banks.[24] Allowing free entry with universal deposit insurance (under the present fee system) would amount to a subsidy to riskier new banks at the expense of existing institutions; it would make their cost of acquiring deposits lower than it would be if the new banks themselves had to compensate depositors for their riskier status.[25] Again, this points to a defect in the present fee system for deposit insurance; it is not a valid ground for keeping out the riskier new entrants. The presumed subsidy to new banks could be eliminated, under a variable fee system, simply by placing new banks in a high risk class with high deposit insurance fees. Should the new bank's loan loss experience turn out to be favorable, it would, of course, have its fees automatically reduced. High minimum capital requirements for entrants, by making new banks less risky to start with, would also counter the subsidy to risky banks under deposit insurance. Such minimum capital requirements are employed today, and, to the extent that they accomplish their ends, they too render entry restriction redundant.

In summary: The problems entry restriction was designed to cope with are already being met by widespread deposit insurance and by regulation of bank capital and asset portfolios. The particular problem that capital and asset regulation deals with—the incentive to high risk-taking under deposit insurance—could also be dealt with by an appropriately designed system of variable deposit insurance fees. In any case, entry control is either redundant or unnecessary as a policy instrument.

Given the general presumption in favor of free entry in other industries, the presumption must then be in favor of abandoning legal restrictions on entry into banking. The net result of these restrictions has been the loss of competition from about 2200 new banks which would have been formed in the absence of entry controls.[26] There appears to be no noticeable offsetting gain to this loss.

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[24] See, e.g., David C. Motter, "Bank Formation and the Public Interest," *The National Banking Review*, 2, March, 1965, p. 303.

[25] See Jacobs, *op. cit.*, p. 345.

[26] This estimate is arrived at as follows: The coefficient of R_t in equation (17) (−.579) is the estimated annual percentage point reduction in the entry rate due to regulation. Multiplying −.579 by the number of existing banks in any year yields the estimated reduction in the number of new banks on account of regulatory restriction in that year. This operation

V. *Recent Development in Bank Entry*

Beginning with the terminal year of this study, the conditions governing bank entry since 1935 changed. In 1961, the Comptroller of the Currency, believing the previous chartering policy to have been overly restrictive, sought to liberalize the chartering of national banks.[27] The Comptroller cannot of course initiate charter applications. However, the discretionary power he has in disposing of them, and the automatic grant of deposit insurance that comes with a national bank charter, make a change in the Comptroller's policy highly important to any potential applicant for a bank charter.

TABLE

Actual and Predicted Value of the Entry Rate in Banking, 1962-1964
(Percent)

Year	(1) Predicted Value, With Regulation	(2) Predicted Value, Without Regulation	(3) Actual Value
1962	1.108	1.687	1.363
1963	.924	1.503	2.207
1964	1.007	1.586	2.459

Source: Regression coefficient and variables (updated to 1964) from equation (17).

The events subsequent to the Comptroller's announced liberalization of his chartering policy should serve as a check on the validity of our conclusion that the 1935 Banking Act had served to reduce drastically the entry rate up to 1962. If administration of that statute had had a small effect on the rate of entry prior to 1962—had caused the number of banks to be only slightly below what it otherwise would have been—the mere fact that the Comptroller wished there to be more banks should not have greatly affected the rate of entry. However, if, as we argue, the effect of the 1935 statute had been large, we should expect a jump in the rate of new entry as a result of liberalization of charter requirements. Thus, the period since 1961 provides us with something like a controlled experiment on the effect of regulation. The experiment is all the more interesting since we have a specific estimate of the effect of regulation to check against the events subsequent to 1961.

Values of the independent variables for 1963 and 1964 were plugged into equation (17), and predicted values of the entry rate in those years were computed. These predicted values, both with and without the estimated effect of regulation, are shown in the accompanying table along with the actual values of the entry rate.[28] (The predicted value without reg-

was performed for every year from 1936 to 1962, and the number cumulated. This sum is the estimated number of banks which would have entered without regulation of entry in the whole 1936-62 period; it turns out to equal 2,196 banks. This is, however, a gross figure—undoubtedly, some of these new banks would have failed or merged. From 1936 to 1962, 30.8 percent of the average number of banks existing in this period disappeared by failure or merger. Reducing 2,196 by this percentage would leave a net gain of 1,519 banks—about 11 percent of the presently existing number.

[27] A statement of the Comptroller's current policy on charters may be found in his "Bank Expansion and Economic Growth: A New Perspective," remarks of James J. Saxon, Comptroller of the Currency, before the National Credit Conference of the American Bankers Association, Chicago, January, 1963. A sample from that source is illustrative:

> There is . . . under present circumstances a special reason for the chartering of new banking institutions. In many areas of the country, it has become increasingly evident that the expansion of banking facilities through the growth of existing institutions has been insufficient to meet public needs. The branching laws of many states have hampered internal growth through the formation of new branches. Nonbank financial institutions not subject to such limitations have in some degree filled this gap. But these needs have also given rise to initiative to charter new banks.

[28] The 1962 predicted value from (17) is also

ulation—column 2—simply adds the estimated effect of regulation, .579 percent, to the column 1 figure.)

In 1962, the first year after the policy change, the actual value of the entry rate exceeded the predicted value (including the effect of regulation), but not significantly so; the difference is less than twice the standard error of estimate of .153.[29] The actual value is roughly halfway between the predicted values with and without regulation, so the effect of the policy change was fairly inconclusive in 1962. In 1963, however, the rate of entry jumped sharply. It was about eight standard errors of estimate greater than the predicted value with regulation, and more than four standard errors greater than the predicted value excluding the effects of regulation. The same orders of magnitude apply to the comparison of 1964 actual and predicted values. There is no comparable 1-year jump in the entry rate over the entire 1921-64 period, and no actual value that far away from its predicted value. Thus, subsequent to the Comptroller's change in policy, we observe an abnormally large, otherwise unexplained, rise in the rate of entry.

Several conclusions may be drawn from this experience. First, it strongly confirms our conclusion that, in the absence of the 1935 Act, the entry rate in banking would have been far higher in most of the years since 1935 than the rates we have observed. Had entry not been restricted greatly in those years, we would not observe the sharp jump in the entry rate when the restrictions eased. Second, the data are consistent with our presumption that our estimate of the effect of regulation was more likely an underestimate of the actual effect of regulation than an overestimate. The actual rate of entry in 1963 and 1964 is significantly in excess of the predicted value even when the estimated effect of regulation is added back. However, some care has to be taken before pressing this last conclusion. The rules governing bank entry are still those of the Banking Act of 1935; it is only the manner in which the discretionary authority granted in that Act has been administered that has changed since 1961. There is nothing in the rules that would prevent a return to the conditions that governed bank entry prior to 1961. Some potential entrants, realizing this, may have preferred applying for a charter now to holding off for a few years and risking rejection then. To the extent that this force has been operative, the rate of entry should decline in the years ahead, whether or not administrative criteria for chartering revert to their pre-1961 state. Some estimate of the level to which the entry rate will decline can be made on the conservative assumption that our estimate of the effect of regulation catches all of the actual effect and not just a part of it. If the chartering policy instituted in 1961 is not changed, we would, on this assumption, predict that the annual rate of entry will decline to roughly 1½ percent—the order of magnitude of column (2) in the table—from the approximate 2½ percent rate recently observed.[30] If the entry rate stays above 1½ percent per year in the future, we may then more safely conclude that our estimate of the effect of regulation is in fact too small.

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shown, since 1962 is the first full year in which any effects of the announced policy change would show up.

[29] The standard error of estimate is a minimum value of the standard error of any individual forecast.

[30] This statement is conditional on the expected rate of return in banking and the other economic variables in our model remaining roughly the same. It also implies that current policy is equivalent to "free" entry. If, as is more likely, it amounts to only "freer" entry, then 1½ percent is an upper limit to our estimate of the level to which the entry rate will settle if the present policy change is permanent.

Should chartering policy revert to the pre-1961 state, the predicted decline in the entry rate would, of course, be even greater—to about 1 percent per year.[31]

In light of our discussion, the recent liberalization of chartering policy can be viewed as highly constructive. It has marked a break with a policy that has restricted competition in banking without any apparent offsetting social gain. However, this change in policy has occurred within a framework in which the rules have remained unchanged. Given the 1936-61 experience, a truly permanent free entry policy would require a change in those rules.

[31] Since this was written, data on new entry for the first half of 1965 have become available. (Cf. Federal Reserve *Bulletin*, August, 1965, p. 1170.) These data tend to support our prediction of a decline in the entry rate. The annualized rate of entry for the first half of 1965 was 1.68 percent. This is already over 30 percent below the 1964 rate, and it is almost equal to the 1½ percent figure at which we predict the entry rate will settle under free entry.

► DAVID T. LAPKIN and RALPH W. PFOUTS

The Administration of the Discount Function

I. *Introduction*

As the oldest of the three major instruments of monetary management, discount policy has been the subject of a voluminous literature. For the most part, this literature has dealt with such matters as the frequency, timing, and extent of rate changes, the coordination of such changes with open market operations, the effects of rate changes on the demand for and availability of credit, and so on.

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As a pragmatic matter, the effectiveness of discount policy depends not only on manipulations of the discount rate, but also on the way in which the Reserve Banks define conditions of eligibility for member bank borrowing. We will refer to this definition of eligibility as the administration of the discount function.

Until recently, the administration of the discount function had received relatively little study outside the Federal Reserve System. As a consequence, very little was known about administration of the discount window, and certain misconceptions were prevalent. For example, it appears to have been widely believed that the Federal Reserve Banks altered their lending policies to conform to the monetary posture of the System.[1] It now

[1] In his article "Credit Policy at the Discount

seems to be more generally understood that the discount window is administered independently of monetary policy, and that at each Reserve Bank the window ordinarily remains open to the same extent whether times are good or bad, and whether money is tight or easy.

Even though we accept the position that each Reserve Bank administers its window independently of monetary policy, and that it is more or less unvarying over time in its attitude toward borrowers, a question still remains as to whether all Reserve Banks administer the discount function in the same way. That is, do they use common criteria in judging the appropriateness of requests for reserve credit? If common criteria are used, a further question is in order. Are the criteria applied uniformly to member banks throughout the System, or are there differences in their application from Reserve District to Reserve District?

The relevant section of the Federal Reserve Act and the pertinent regulations of the Board of Governors are framed in terms broad enough to permit (or even encourage) differing interpretations concerning appropriate administration of the discount function. For example, Regulation A provides that "the continuous use of Federal Reserve Credit by a member bank over a considerable period of time is not regarded as appropriate." [2] Further, each Reserve Bank is constrained to give "due regard to the purpose of the credit and to its probable effects upon the maintenance of sound credit conditions." [3] However, key terms such as "continuous borrowing," "a considerable period of time," and "sound credit conditions" are not defined with precision in either the statute or the regulations. As a consequence, the interpretations of what constitutes appropriate use of the discount window may vary from one Reserve Bank to another. Indeed, the exercise of discretion by the Reserve Banks is made virtually mandatory by a statement in the introduction of Regulation A indicating that each Reserve Bank should interpret a request for accommodation "in the light of its best judgment."

Thus, it is quite possible that inter-district differences exist in the administration of the discount function. The purpose of this paper is to examine such differences. Specifically, we will test two hypotheses: (1) that there are important differences between Districts in the relative magnitude of member bank borrowing; and (2) that the differences in member bank borrowing between Districts can be accounted for in some measure by differences in the administration of the discount window.

II. *Inter-district Differences in Borrowings*

The Reserve Banks do not make public either the records of member banks' requests for credit or the deliberations of their discount committees. Thus, what each Reserve Bank considers to be "appropriate" borrowing is not known; nor is it known how much individual member banks may have been able to borrow at any one time, or for how many consecutive reserve periods they may remain in debt to the Reserve Bank. The only available data on the volume of discounts are totals by type of bank (central reserve city, reserve city, and country) for each District in the form of semi-monthly averages of daily figures of member bank borrowing. These data for the period 1951-59 were used in constructing Table 1 which shows member bank borrowing as a percent of member bank reserves for reserve city banks and country banks for each District. The data for this study thus cover a period from the Treasury-

Window," *Quarterly Journal of Economics,* Volume LXXIII, May 1959, pp. 207-216, Professor C. R. Whittlesey pointed out this misconception.

[2] Board of Governors of the Federal Reserve System, *Advances and Discounts by Federal Reserve Banks,* Regulation A, p. 1.

[3] *Ibid,* p. 2.

TABLE 1

Member Bank Borrowing as a Percent of Member Bank Reserves, by Federal Reserve District and Category of Bank *

	Averages 1951-1959		1951		1952		1953		1954	
	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks
Boston	1.6	3.4	0.5	1.5	1.4	1.8	1.2	3.4	0.2	1.7
New York	3.2	3.1	3.7	2.5	2.7	2.7	3.1	4.1	0.6	1.0
Philadelphia	5.1	2.5	1.2	1.4	4.3	2.1	3.6	3.0	0.2	1.6
Cleveland	4.0	1.6	1.3	0.5	4.5	1.2	5.9	1.6	0.6	1.0
Richmond	3.7	3.0	1.2	1.1	4.9	4.0	4.7	3.5	1.1	1.4
Atlanta	6.5	1.9	1.4	0.3	5.3	0.5	7.1	1.0	2.4	0.6
Chicago	4.3	1.7	2.0	0.3	4.6	3.4	4.1	3.5	1.3	0.5
St. Louis	4.4	1.1	2.6	0.8	8.6	1.2	8.1	1.1	1.3	0.4
Minneapolis	9.4	2.1	4.8	0.6	5.8	1.4	10.8	2.2	2.0	1.1
Kansas City	6.9	2.5	2.7	1.1	10.5	2.4	9.0	1.7	1.7	0.9
Dallas	2.7	0.9	0.4	0.1	2.8	1.1	4.3	1.0	0.7	0.2
San Francisco	2.0	0.8	2.9	0.3	5.9	1.0	3.3	1.4	0.9	0.1

	1955		1956		1957		1958		1959	
	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks
Boston	2.6	3.0	2.4	4.5	2.4	6.8	1.1	2.8	2.7	5.6
New York	3.9	3.1	5.1	3.7	3.6	3.7	1.6	2.3	5.0	3.9
Philadelphia	6.3	3.2	11.4	3.5	11.2	3.3	1.3	1.7	6.3	2.9
Cleveland	3.3	1.3	5.9	2.0	6.0	2.6	2.8	1.9	5.3	2.4
Richmond	3.5	3.0	4.2	3.5	5.2	3.7	2.0	1.9	6.4	4.9
Atlanta	8.5	2.3	8.0	2.5	10.6	2.4	3.9	2.1	11.2	5.3
Chicago	4.4	1.2	7.8	1.3	5.7	1.5	3.1	1.1	5.7	2.6
St. Louis	4.8	1.0	4.7	1.1	3.5	1.3	2.0	0.9	3.9	2.4
Minneapolis	19.1	2.4	14.1	3.8	17.1	2.9	2.2	1.3	10.0	3.9
Kansas City	6.7	2.2	7.6	2.4	8.8	3.5	3.2	2.9	13.0	5.7
Dallas	2.9	1.0	4.7	0.9	3.2	1.4	0.8	0.6	4.5	2.2
San Francisco	1.4	0.8	1.0	1.3	1.4	1.0	0.4	0.2	1.5	1.3

* Annual Averages of Semi-Monthly Data, 1951-1959.
Source: January 1 releases of the Board of Governors of the Federal Reserve System.

Federal Reserve Accord to the series of changes in reserve requirements that permitted member banks to count their vault cash as part of their legal reserve. These years marked the reinstitution of discount policy as an active tool of monetary management after a hiatus of two decades in which the discount window was virtually unused. The period is long enough to lend assurance that the results we find are not due solely to short-run factors; it is homogeneous enough to lend confidence that the results are not distorted by the changes in reserve requirements.

Before analyzing the differences between Districts with regard to borrowing, we take up the question of whether reserve city banks and country banks should be considered separately or should be combined into one group for analysis. The substance of the point involved is whether, within a given District, reserve city banks and country banks show dif-

ferent patterns of borrowing from the Reserve Banks.

To provide an answer to this question, the reserve city banks of each District were ranked according to the amounts they borrowed expressed as a proportion of reserves for the entire 9-year period. The country banks of each District were also ranked by borrowing as a percent of reserves for the entire period. The rankings were derived from the first two columns of Table 1. The rank correlation coefficient for the two rankings is found to be .040, which is not significant. Thus, there is no discernible relationship between the rankings on the basis of borrowing of reserve city banks and country banks. This same result is apparent by inspection. For example, the Boston District's country banks ranked first among Districts in percentage borrowing, but the reserve city banks in the Boston District were twelfth in percentage of borrowing. Similarly, the New York District's country banks were second and their reserve city banks ninth, while Minneapolis reserve city banks were first and their country banks sixth. Since there is relatively little correspondence within a Reserve District between the percent borrowed by reserve city banks and that borrowed by country banks, it seems desirable to treat each of these two groups separately; this stratification will be used throughout the remainder of the discussion. Because the central reserve city bank category is confined to only two Districts, it is not important from the standpoint of inter-district differences in borrowing and will be omitted in the following discussion.

Examination of the data averages for the years 1951 to 1959, the entire period covered by the study, clearly reveals the extent to which member bank use of the discount window varied among Reserve Districts. At one extreme, the reserve city banks in the Ninth Federal Reserve District secured almost 10 percent of their legal reserves by borrowing from the central bank; at the other extreme, reserve city banks in the First Federal Reserve District borrowed less than 2 percent of their legal reserves. Moreover, although the range was smaller, inter-district differences in borrowing as a percent of reserves also existed in the case of country banks.

TABLE 2

Variance Ratios of Borrowing as a Percent of Reserve by Federal Reserve Districts, 1951-1959, For Reserve City and Country Banks

	Variance Ratios	
Reserve City Banks	Logarithms	Natural Numbers
Columns (Year)	27.208	11.697
Rows (Districts)	11.867	9.208
Country Banks		
Columns (Years)	24.292	17.058
Rows (Districts)	16.913	12.206

To study the differences in borrowing between Districts, use was made of data for reserve city banks from Table 1 which show borrowing as a percent of reserves by District. A two-way analysis of variance calculation was made, with the years 1951 through 1959 as the columns and the twelve Federal Reserve Districts as the rows. The purpose of such a test is to show whether the borrowing differs significantly from year to year and from one District to another. Because a logarithmic transformation may improve a variate's approximation to normality, analysis of variance tests were made with the data as reported and with the data transformed into logarithms. A similar type of analysis was carried out for country banks. The results of these calculations are shown in Table 2.

Inspection of Table 2 shows that all of the variance ratios are highly significant; this is true whether the data are handled as natural numbers or transformed into logarithms, and it is true for both reserve city and country banks. As a conse-

quence, we have grounds for believing that there are differences between Districts in the relative magnitude of member bank borrowing from the Reserve Banks as measured by borrowing as a percent of reserves. We conclude that the evidence shows that our first hypothesis should be accepted; there are important differences between Districts in the extent of member bank borrowing for both reserve city banks and country banks.

III. *Inter-district Differences in Member Banks' Demand for Loans*

Up to this point, our evidence has dealt only with borrowing behavior and not with the administration of the discount function. Inter-district differences in member bank borrowing may be due to varying administration of the discount window from District to District, or they may be due to different demands for funds on the part of member banks in different Districts.

In turn, a great many different economic and social forces may influence the activities of member banks and hence indirectly affect their demand for funds. For example, the rate of economic growth in a community might well influence the lending activities of a bank in the community, as might the seasonal pattern of economic activity.[4] Indeed, the forces that might ultimately determine the extent to which member banks seek accommodation at the discount window are obviously numerous and disparate. In any case, all of these forces become effective with regard to borrowing only when a bank is in danger of operating with inadequate reserves and must, as a result, discount.

Further, the adequacy of the reserve position of a bank is not entirely a matter of legal requirement; rather, it is also a matter of the opinions and attitudes of the management of the bank, some banks being less willing to run close-hauled than others. Consequently, we suggest that as an empirical rule the banks that are more aggressive, in the sense of keeping excess reserve at minimal levels, are more likely to borrow than banks that use their reserves less extensively. It is recognized that this rule is not iron-clad and that exceptions exist.[5] To put the matter bluntly, we proceed on the assumption that aggressive use of reserves is an indicator of high demand for funds and that non-aggressive use of reserves indicates low demand for funds.

We measure aggressiveness by the ratio of required reserves to total reserves. These data for each Reserve District are given in Table 3 for the years 1951-59, with the information being shown for reserve city banks and country banks.

The data in Table 3 were also subjected to a two-way analysis of variance test for both reserve city and country banks for the period 1951-59. The purpose of the test was to see whether there are significant differences in aggressiveness in different Districts for each class of banks. The results of the calculations are reported in Table 4.

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[4] Borrowing to finance seasonal movements in industry, trade, and agriculture is viewed as a "legitimate" use of the discount window by all Reserve Banks.

[5] We recognize that some banks that are aggressive by our standards might, for a variety of reasons, prefer to adjust their reserve positions without recourse to the discount window—through the Federal funds market, perhaps. If such banks are large relative to other banks in the District, our results may overstate the degree of tightness of discount window administration in that District. When a member bank is unwilling to borrow, however, one cannot be certain whether the reluctance is the result of the attitude of the Reserve Bank officials, or whether it reflects some other consideration instead. In any case, we believe that the unwillingness to borrow for reasons other than the administration of the discount window is the exception rather than the rule.

TABLE 3

Required Reserves as a Percent of Total Reserves for Member Banks by Federal Reserve District and Category of Bank *

	Averages 1951-1959		1951		1952		1953		1954	
	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks
Boston	99.3	94.3	98.1	92.9	98.7	93.4	99.7	94.2	99.4	93.5
New York	99.3	93.4	98.7	91.5	99.2	92.7	99.1	93.1	99.1	91.6
Philadelphia	99.7	91.8	99.3	90.7	99.5	91.0	99.9	91.5	99.8	90.4
Cleveland	99.1	89.4	98.6	88.3	98.9	89.1	99.0	89.1	98.8	87.5
Richmond	98.3	89.4	96.6	87.6	97.6	88.2	97.8	88.9	97.7	87.5
Atlanta	97.8	91.6	96.0	90.5	97.0	90.5	97.5	91.2	96.4	89.5
Chicago	98.7	90.6	97.8	89.4	98.1	89.8	98.4	90.1	98.4	89.0
St. Louis	99.0	90.9	98.2	90.3	98.7	91.0	99.3	91.0	98.7	89.1
Minneapolis	99.0	90.3	93.6	89.4	98.9	89.4	99.0	89.9	98.7	88.0
Kansas City	97.1	87.7	96.3	87.7	96.8	88.0	97.0	87.1	96.3	84.5
Dallas	97.7	88.0	95.7	87.1	96.8	87.6	97.2	87.8	97.8	85.9
San Francisco	99.2	94.2	98.4	92.6	98.9	93.2	99.1	93.6	99.0	92.4

	1955		1956		1957		1958		1959	
	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks	Res. City Banks	Country Banks
Boston	99.6	94.4	99.6	94.8	99.6	95.3	99.4	94.7	99.6	96.2
New York	99.5	93.4	99.6	94.1	99.7	94.8	99.4	94.2	99.5	95.5
Philadelphia	100.0	91.8	99.7	92.1	99.7	92.9	99.7	92.0	99.8	94.2
Cleveland	99.4	89.0	99.3	90.0	99.4	90.6	99.2	90.1	99.5	91.5
Richmond	99.1	89.3	98.7	89.7	98.9	90.7	98.8	90.6	99.5	92.7
Atlanta	98.5	91.4	98.4	92.5	98.8	93.1	98.1	92.1	99.3	93.5
Chicago	99.1	90.4	98.9	90.9	99.2	91.7	99.0	91.2	99.3	92.7
St. Louis	99.3	91.1	99.2	91.5	99.4	91.6	98.7	90.4	99.3	92.5
Minneapolis	99.3	90.2	99.1	90.9	99.3	91.5	98.9	91.0	99.4	92.8
Kansas City	97.6	86.6	97.5	87.7	97.8	89.2	97.1	88.5	98.4	90.7
Dallas	98.1	87.7	98.3	88.7	98.7	89.1	97.8	88.2	98.8	90.4
San Francisco	99.5	94.1	99.5	94.8	99.6	95.7	99.4	95.4	99.6	96.7

* Annual Averages of Semi-Monthly Data, 1951-1959.
Source: January 1 release of the Board of Governors of the Federal Reserve System.

TABLE 4

Variance Ratios of Required Reserves as a Percent of Total Reserves by Federal Reserve Districts, 1951-1959, for Reserve City and Country Banks

Reserve City Banks	Logarithms	Natural Numbers
Columns (Years)	15.091	15.634
Rows (Districts)	16.697	17.655
Country Banks		
Columns (Years)	97.042	101.180
Rows (Districts)	219.542	230.095

All of the variance ratios in Table 4 are highly significant. Consequently, we have reason for believing that aggressiveness among the reserve city banks and among country banks differs to an important and meaningful extent from District to District.

IV. *Relationships between Borrowing and Aggressiveness*

If there were no inter-district differences in the administration of the discount function, we would expect to find aggressive use of reserves positively correlated with discounting by member banks. That is, if the discount windows were available on the same terms in each District, the more aggressive banks with their stronger demands would make the most use of the discount window in each District. This simply restates our assumption that demand for funds by aggressive banks would be strongest.

To study the actual relationships between discounting and aggressiveness, the Reserve Districts were ranked by member bank borrowing as a percent of reserves, and by required reserves as a percent of total reserves, i.e. by borrowing by member banks and also by aggressiveness of member banks. This was done for both reserve city banks and for country banks. The rankings by borrowing are derived from the first two columns of Table 3. The rankings are based on data for the entire period, 1951-59. Rank correlations between borrowing and aggressiveness were found for reserve city banks and for country banks.

Table 5 shows the relevant rankings of the Districts and the rank correlation coefficients. Turning our attention to the reserve city bank category first, we observe that the rank correlation is $-.336$, which is not significant at the 5 percent level. Thus, we have grounds for concluding that there is no relationship between aggressiveness and borrowing. This, in turn, suggests the further conclusion that if the administration of the discount function were uniform from District to District, we would expect a positive as well as a significant correlation between aggressiveness and borrowing, since the needs of aggressive banks are usually stronger than those of nonaggressive banks. The correlation coefficients, however, show no such relationship. Therefore, we have reason for saying that the administration of the discount function varies from District to District.

Inspection of the rankings for the reserve city bank category supports the suggestion of inter-district differences in the administration of the discount window. For example, Boston, New York, San Francisco, Minneapolis, Atlanta, and Kansas City have large differences in their rankings for aggressiveness and borrowing, indicating that either aggressive banks do not discount heavily in spite of their presumably stronger need for funds, or that nonaggressive banks discount heavily. Boston is an example of a case of aggressive banks with little discounting, while Kansas City is an example of nonaggressive banks which discount heavily. On the other hand, reserve city banks in the Philadelphia, Cleveland, St. Louis, Chicago, Richmond, and Dallas Districts show aggressiveness and borrowing to be closely related.

The suggestion of inter-district differences in the administration of the discount function is also supported in the

TABLE 5

Rankings and Rank Correlation Coefficients of Aggressiveness and Borrowing for Reserve City and Country Banks by Districts Averages, 1951-1959

	Reserve City Bank		Country Banks	
	Aggressiveness	Borrowing	Aggressiveness	Borrowing
Philadelphia	1	4	4	4.5
Boston	2.5	12	1	1
New York	2.5	9	3	2
San Francisco	4	11	2	12
Cleveland	5	7	9.5	9
St. Louis	6.5	5	6	10
Minneapolis	6.5	1	8	6
Chicago	8	6	7	8
Richmond	9	8	9.5	3
Atlanta	10	3	5	7
Dallas	11	10	11	4.5
Kansas City	12	2	12	11
	$r_{re} = -.336$		$r_c = .213$	

case of country banks. Here again, the rank correlation coefficient is not significant at the 5 percent level, and again inspection of the last two columns of Table 5 suggests a diversity of practice among Districts. The San Francisco, Cleveland, St. Louis, Richmond, and Kansas City Districts show little correspondence between aggressiveness and borrowing. On the other hand, Philadelphia, Boston, New York, Cleveland, Minneapolis, Chicago, Atlanta, and Dallas show a close correspondence between aggressiveness and borrowing. These facts support the view that the discount function is administered differently from District to District, and thus support the second of our two hypotheses.

Essentially, we have presented factual information that is compatible with the hypothesis of inter-district differences in the administration of the discount window. The factual evidence is not compatible, we argue, with uniform administration of the discount function.

► HARRY G. JOHNSON

This is a review article of Robert V. Roosa's MONETARY REFORM FOR THE WORLD ECONOMY, *published for the Council on Foreign Relations by Harper & Row, New York and Evanston, 1965. Pp. ix + 173, $3.95.*

Roosa on International Monetary Reform

During at least the early phases of his tenure as Under Secretary of the Treasury for Monetary Affairs from 1961 to 1965, Robert V. Roosa was to all external appearances the most important personage determining the course both of U.S. international financial policy and of the evolution of the international monetary system. For most of that period, Mr. Roosa and the Administration vehemently rejected any suggestion from either academic economists or foreign central bankers and finance ministers that international monetary arrangements were in any respect defective or in need of reform. This position was abruptly reversed in the latter half of 1963, when it at last became apparent to the Administration that the U.S. deficit was a chronic, and not a transient, phenomenon, and that European acquiescence and cooperation in the temporary expedients by which the Treasury had theretofore largely financed the deficit could no longer be relied on. Since Mr. Roosa's departure from the Treasury, the United States has become the leading proponent of the need for a reform of the international monetary system. In this book—an extended version of the Elihu Root Lectures sponsored by the Council on Foreign Relations—Mr. Roosa presents his own suggestions for the reform of international monetary arrangements. These command attention by virtue of the author's status as a monetary expert, and his long and intimate official involvement with these problems.

Academic experts on the international

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monetary system—who were, incidentally, appreciably ahead of foreign central bankers and far ahead of U.S. officialdom in recognizing and calling attention to the dangers of the present dollar exchange standard—have agreed in distinguishing three major problems of that system: the confidence problem; the adjustment problem; and the long-run liquidity problem. Mr. Roosa is concerned only with the last of these problems. For the rest, he takes his stand on the present system of fixed exchange rates based on a gold price of $35.00 per ounce. This position could be defended on two possible grounds: first, that whether one likes it or not the United States and other major countries are committed to the present system, and that it would be inappropriate for a former Treasury official who had labored responsibly to honor this commitment to rock the boat he had formerly steered through the troubled seas; and second, that with all its present disadvantages, the fixed rate system does seek to establish the equivalent of a single world currency, and therefore, is one of the prerequisites of a single world economy.[1]

Unfortunately, Mr. Roosa is content to appeal neither to political realism nor to economic idealism. Instead, he defends the present system against its critics by disputing the validity of their arguments. The result is a *bouillabaisse* of reaffirmations of the woolly wisdom of the status quo, citations of the accepted mythology of the facts of experience, assertions of bland nonsequiturs, interpositions of rhetorical questions demanding the wrong answers, and—most distasteful—deliberate appeals to the anti-intellectualist tradition of American culture to belittle academic expertise in favor of the superior wisdom of "responsible officials." This style of presentation is calculated not to dispose of problems, but to reassure those who are determined to disregard their existence—the bankers and others who are precommitted to the gold standard ideology. It is indeed surprising to discover how deeply Mr. Roosa's thinking is imbued with that ideology, especially in its affirmation of gold as the ultimate real money, and its identification of monetary stability with fixity of currency value in terms of gold, considering the lengths to which the Administration went during his term of office to evade the implications of the gold standard for American economic policy. The consequence of Mr. Roosa's resort to this style of presentation is very likely to be a less sympathetic reception of his positive suggestions than they should command on their own merits.

Mr. Roosa's approach to his subject is to begin with a statement of the conditions for international monetary order and the essential requirements for achieving them. He then discusses the objectives of reform and the extent to which they can be accommodated both by adaptation short of reform and by "constructive" reform. Finally, he outlines an agenda for reform, this last subject occupying nearly half the text.

The statement of the conditions for monetary order begins with a useful classification of three facets of international monetary organization: national currencies for domestic use; "vehicle" or trading currencies for ordinary international transactions; and reserve assets (including gold, reserve currencies, and I.M.F. claims) for transactions between central banks. Monetary order is held to require an expansion of each, adequate to meet the growing demand for media

[1] The former defense might alienate some readers, though probably fewer than will the approach Mr. Roosa actually adopts; the latter would encounter considerable difficulty in maintaining that the fixity of exchange rates in recent years has contributed more to world economic integration than the interferences in international trade and payments necessary to maintain the fixed rate system have contributed to world economic disintegration.

of exchange without jeopardizing their functions as stores of value, the preservation of interconvertibility among them by the exertion of pressure on deficit and surplus countries to correct imbalances, and the provision of credit to permit orderly correction of such imbalances. Some "established fundamentals" of the system, regarded as noncontroversial, are then stated: the use of vehicle curencies; national sovereignty in controlling national currencies; a bias against deflationary adjustment policies; gold as the primary international reserve; adherence of countries to the I.M.F.; and a sixth (p. 16) which is very obscurely worded but seems intended to convey the thought that deficit countries can rely on, and surplus countries should be prepared to supply, credit for accommodating imbalances, "subject to generally accepted standards of responsible behaviour" in the former case, whatever that phrase may mean. This last "fundamental" can hardly be regarded as "established." On the contrary, it is the crux of the conflict between the United States and the European countries that has been building up since 1963.

There follows a discussion of three other "essential conditions" which the author rightly believes require some defense, but regarding which his justification (as already indicated) is far from satisfactory. The first is the necessity of the $35 per ounce gold price. Roosa's arguments here rest on the belief that gold is primary, and that the dollar derives its value from its present price in terms of gold. Yet he asserts that the other countries would not permit a devaluation of the dollar relative to their currencies—an argument that implies the converse proposition, and suggests that U.S. policy has been based on false premises. Roosa also asserts, without convincing argument, that an attempted devaluation through a change in the gold price would lead to a loss of U.S. gold reserves; on the contrary, the vast majority of those who oppose a revaluation of gold fear that the result would be another "golden avalanche," as private and official speculators realized their long-awaited profits from gold appreciation.

The second essential is the continuing role of the United States as world banker. The argument here fails to consider the possibility of separating the two functions of vehicle and reserve currencies; it pays no attention to the abrogation of the vehicle currency role entailed by deficit-induced U.S. interventions in the private capital markets; and it loads the dice by assuming a liquidation of dollar reserve balances instead of their replacement by genuinely international reserves that most reformers have explicitly recommended.

The third essential is the need for fixed exchange rates. Here the author advances the following nonfact, (p. 27):

> The apparent logic of the scholastic case for fluctuating rates, despite persuasive repetition by able academicians through the years, has never survived the ventilation of experience. Whenever speculation has been encouraged in the free market tradition, more often than not it has been destabilizing so far as exchange rates were concerned. Moreover, public authorities then come under pressure to manipulate rates, and usually do. This leads to competitive devaluation, and on to trade and exchange restrictions.

Not content with this clincher, he attempts to demonstrate that, even if left alone, free exchange rates would degenerate into "disorderly chaos" if they did not have "some fixed point of reference," such as is provided in practice by fixed exchange rates. The demonstration rests on the assumption that a government that desires to perpetuate a surplus by intervention in the foreign exchange market should not allow itself to be frustrated by a floating rate; and indeed, the whole thrust of the argument is that life will be easier for "responsible officials" (and

secondarily for private business) if rates are fixed.

While Mr. Roosa favors fixed exchange rates, he argues that the advantages of floating rates in making speculation costly if misguided can be secured by official operations in the forward markets. One apparent virtue of this technique, Mr. Rossa believes, is that it was invented a few years ago by practical bankers, though most economists know that it was first recommended by J. M. Keynes, and revived in academic submissions to the Radcliffe Committee. Mr. Roosa also mistakenly implies that it requires "swap" operations for its success; this leads him into a brief account of the various steps towards international monetary co-operation that have occurred in recent years, an account in which his own past role in cajoling such cooperation from other countries is suppressed and the impression is conveyed that co-operation was freely tendered in recognition of the *responsibility* felt by these countries in return for the *privilege* they enjoyed of converting their dollars into gold at a fixed price (Roosa's italics, p. 33). It is to the extension of such international co-operation, Mr. Roosa asserts, that the world must look for improvement of its monetary system; and on this general principle realism compels one to agree.

In his second chapter, Mr. Roosa turns to a discussion of the various objectives of reform, and their consistency with the fundamentals of the present system, taking as his starting point the proposition that the viability of the dollar must be restored before reform can be discussed. (On this point, the Administration may well have "jumped the gun.") His initial concern is to emphasize the prevalence of disagreement among the reformers. He does this by listing six apparently conflicting objectives: to end the over-expansion of reserve currencies; to enlarge the capacity for liquidity creation; to reduce the strain on reserve currencies; to transfer excess idle reserves to active uses; to install automatic arrangements to supply liquidity; and to substitute consciously guided reserve creation for present unguided arrangements. The impression of hopeless anarchy could have been mitigated, had the author so desired, by recognizing that the successive pairs of objectives are directed respectively at the adjustment, confidence, and long-run liquidity problems mentioned above, and that the antinomies between the members of each pair reflect a single basic cleavage over the appropriate distribution of the burden of adjustment between surplus and deficit countries.[2] Mr. Roosa then argues that many of the proposals for reform involve misunderstandings of the present system or lack of appreciation of what can be done by adaptation short of reform. Specifically, he argues that vehicle currencies will and should continue to be used; that "multilateral surveillance" and American understanding of the lessons of recent experience will prevent excessive U.S. deficits in the future; that the present system is adequate to ensure additional liquidity as needed in the immediate future; that strains on the reserve currencies can be reduced by a variety of credit arrangements within the present system; and that the creation of reserves can be further systematized, especially by manipulation of the currency content of drawings on the I.M.F. On this basis, he concludes that the present system is at least minimally adequate to foreseeable economic needs, but that there is scope for constructive reform along two complementary lines: through arrangements for the creation of an acceptable new reserve asset, and through the development of new credit facilities, especially facilities of a longer-term nature than is now consistent with the liquidity requirements of

[2] See, for example, Robert A. Mundell's article "The Proper Division of the Burden of International Adjustment," *The National Banking Review*, 3, September 1965, p. 81.

conventional central banking. The latter point is of considerable importance, and has tended to be overlooked in academic discussions of international monetary reform because it stems from institutional rather than theoretical considerations. The crucial consideration is that imbalances of the size and duration likely to characterize a fixed rate system in which domestic policy objectives make the adjustment process reluctant and slow imply the necessity of international lending on a larger scale and for longer terms than traditional central banking practice can readily digest.

Mr. Roosa's concrete suggestions along these lines are presented, with due modesty and appropriate recognition of possible alternatives, in a long concluding chapter. The structure of this chapter is, unfortunately, poorly designed to enable assessment of the relative merits of his main proposal for a new primary reserve asset—the "Fund Unit"—as against possible alternatives. Mr. Roosa first outlines the Fund Unit proposal in the form of answers to a series of questions, then discusses alternative approaches to the creation of a new secondary reserve asset (credit facilities), and only incidentally after this, under the somewhat misleading title of "Harmonizing the Old and the New," discusses alternative approaches to the expansion of primary international reserves.

The three suggested alternative approaches to the creation of a new secondary reserve asset—special nonmarketable medium-term bonds redeemable on demand in case of reserve need, consolidation loans for large short-term debtors or holders of excess reserves, and long-term loans of reserve funds for monetary purposes—all derive in an obvious way from contemporary international monetary problems and unquestionably could be useful supplements to the system. The Fund Unit proposal is more novel and discussion-worthy. Its main outlines are as follows: A Fund Unit Account would be established at the I.M.F. into which participating countries would pay amounts of their own currencies and from which they would receive an equal amount of Fund Units. These Fund Units would serve as reserves substitutable for gold or reserve currencies, with participants obliging themselves to accept Units from each other up to at least the amount of their participation. To encourage acceptability of the Units, participants would not only give the usual guarantee of maintenance of gold value of their subscriptions, but also undertake to buy and sell gold in exchange for their currencies (instead of pegging their currencies on dollars as most do now.) Fund Units, being reserves, would not bear interest, but interest (at a recommended 3 percent) would be paid for the privilege of acquiring them. Eligibility to participate, and shares of participants, would be determined by past use of participants' currencies in international settlements. However, participants would have the privilege of "opting out" of each round of increases in the supply of Fund Units, their shares in this case being reallocated to other participants. The initiation of increases in the Fund Unit Account would be the responsibility of a Governors' Committee of the I.M.F., composed of representatives of the participating countries and a minority representation of nonparticipants, but this initiative would be subject to voting approval by the full I.M.F. membership.

The main virtue of this scheme, as compared with the two principal alternatives under current discussion of developing a new reserve asset outside the Fund to be controlled by the creditor countries, and expanding the provision of liquidity through the Fund, is that it embodies a feasible compromise between the internationalization of reserve creation and the preservation of national sovereignty. The corollary drawback is that the scheme could be rendered nugatory by decisions of leading countries to opt out

of proposed increases in the size of the Account, or simply to keep their initial holdings of Fund Units in cold storage. But, as Roosa points out, if countries are determined not to co-operate, nothing can be done to force them to do so.

At the technical level, certain aspects of the scheme seem to have been insufficiently thought out. In the first place, the two-stage initiation-approval procedure for increasing the quantity of the Fund Units will obviously in practice have to be a complex, simultaneous negotiation. Secondly, the interest payments by participants will amount to a substantial annual sum, probably far in excess of operating costs, and it is extremely doubtful that much if any of the surplus would be required to absorb "possible losses through outright default on the part of any contributing country" (p. 91), so that more thought needs to be given to the levying and disposition of interest on participations. Finally, the question of pegging to gold rather than dollars has two deeper implications for the system than appear at first sight. The first implication, of which Roosa is adequately cognizant, is that pegging to gold rather than the dollar would reduce the present concentration of the pressures of all international imbalances on the U.S. gold reserves, and eliminate the need for many complicated international credit maneuvers now necessary to accommodate this concentration. The second implication, which Roosa ignores, is that the margins of variation about the parity price of gold to be allowed would determine the amount of automatic adjustment that the system permitted, and hence would influence the amount of additional liquidity it required.

The main question raised by the Fund Unit scheme, however, concerns its attractiveness by comparison to other possibilities of expanding liquidity within the existing system. As already mentioned, Roosa treats this question incidentally, as part of a discussion of the further potentials of existing arrangements. The main possibilities are three: controlled expansion of the use of dollars as international reserves under multilateral surveillance; expansion of I.M.F. quotas; and development of the use of deposits of currencies at the Fund into a "super-gold-tranche" arrangement (which would fall into the category of reform rather than mere extension). The argument for the Fund Unit scheme as a supplement or substitute for these possible lines of development is essentially that the latter are all *ad hoc* techniques, whose consequences for reserve growth might be highly variable, whereas the Fund Unit Account could be managed in compensatory fashion to achieve an orderly expansion of aggregate liquidity. This may well be so. But within this restricted context, it could be argued that a Fund Deposit scheme, properly administered by the I.M.F., could achieve the same ends more flexibly without raising such delicate issues of reconciling international interests wth national sovereignty. The next stage of the debate on international monetary reform may well concentrate on this issue.

As this review has indicated, Mr. Roosa has confined himself to a very small segment of the territory over which the debate on international monetary reform has raged. In doing so, he has taken his stand on some very doubtful ground, especially the positions that the present system has worked reasonably satisfactorily, and that gold rather than the dollar is, and will remain, the foundation of the international monetary system. Nevertheless, within the territory he has chosen, he has presented a cogent analysis and an agenda for reform based on his own intimate involvement with the evolving international monetary system, which should constitute a useful starting point for future discussion of reform, at least so far as the provision of additional liquidity is concerned.

►ROBERT A. MUNDELL

This is a review article of Gerard Curzon's MULTILATERAL COMMERCIAL DIPLOMACY: An Examination of the Impact of the General Agreement on Tariffs and Trade on National Commercial Policies and Techniques. *London: Michael Joseph, 1965. Pp. 367, $8.40.*

Multilateral Commercial Diplomacy

U. S. planning for postwar international economic order, begun even before American engagement in the hostilities, rested on the premise that lasting peace would require appropriate policies in the international economic arena. Haunting the wartime deliberations was the specter of economic isolationism, nationalism, and instability—a recurrence of the legacy of the 1930's. The specific challenge was the need to set up institutional machinery to prevent or contain depression, currency chaos, protectionism, trade restrictions, exchange control, dried-up lending, and discrimination. These ills were international in scope [1] and would require some surrender of sovereignty over national economic policies.

The challenges came to be divided into two categories. One was the *financial* problem concerning the balance of payments policies, exchange rates, and international lending; the other was the *commercial* problem involving protectionism, allowable discrimination, and the level of trade and employment. The financial problems became centered in the Treasury, under Henry Morgenthau, Harry White, and others, the commercial problems in the State Department under Cordell Hull, Harry Hawkins, and others. A companion division of labor developed

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[1] One other legacy of the interwar period, the problem of war debts, could be, and was, dealt with unilaterally by the U.S. No better object lesson that governments do learn from past mistakes exists than the generous settlement of lend-lease, the terms of the British loan (marred only by unfortunate strings requiring premature convertibility of sterling), and Marshall Plan aid, an unprecedented contribution of resources which freed the Western world from a shadow overhanging it since the Treaty of Versailles.

across the Atlantic with Keynes, involved in his Clearing Union Plan, Meade, with the plan for a Commercial Union, and (now Lord) Robbins as head of the Economic Section of the War Cabinet Secretariat.

The formal success of the financial institutions contrasts with the failure of the commercial solution. The financial negotiations gave birth to the Bretton Woods twins, the IMF being given responsibility over exchange rates, liquidity, and short-term balance of payments finance, and the IBRD over long-term lending and development policy. Both institutions were initially handicapped by inadequate resources, and their functions were in the early years pre-empted by Marshall Plan aid; but they have since fulfilled valuable functions.

The other half of the grand design, however, fell afoul of complicated negotiations, bad compromises, and finally, the United States Congress. Negotiations for the International Trade Organization, whose charter was to contain both commercial policy and employment provisions, were interrupted at an early stage by conflict over responsibility for full-employment policies and the role of discrimination. The British, worried by fear of a U.S. depression reminiscent of the thirties, wanted the rules of commercial policy made contingent on full employment, whereas the Americans, preoccuppied with sterling area restrictions and Imperial Preference, wanted the ITO to outlaw discrimination. One of the major points of contention turned on what reduction in the U.S. tariff would compensate for the end of Imperial Preference, a nagging theme that had been implicit in U.S.-U.K. discussions since the signing of the Atlantic Charter.[2]

The ITO Charter, signed in Havana in March 1948, was an uneasy compromise of these conflicts, satisfying neither the British public—which had become especially resentful of American interference in British economic policy since the abortive attempt at convertibility in the summer of 1947—nor the American Congress —which had become disillusioned by British reluctance to end discrimination in favor of a truly multilateral trading system. It was doubtful whether the Havana Charter would have been ratified by the U.K. Parliament. In any event, the choice became unnecessary when the U.S. Congress, faced with vociferous complaints of U.S. business about the Charter's escape clauses and lack of investor protection, and distracted by the reappraisal of world commitments during the early stages of the Korean War, refused to ratify it.

The great efforts to construct an acceptable set of rules governing trade were fortunately, however, not a complete waste. At an early stage in the discussions it had been recognized that negotiations would stretch over a long period of time. In the meantime, interim agreements would be necessary and they proved to be possible in the area of tariff policy.

The crucial issue was the U.S. tariff, which, after the unfortunate Smoot-Hawley tariff of 1930, was the most important barrier to trade in the world (despite reductions subsequently achieved under the Reciprocal Trade Agreements Act). The success of a multilateral approach clearly depended on the negotiability of this all-important obstacle to world trade.

The break came when the Administration got authority from Congress to reduce tariffs to 50 percent of the 1945 level. This gave effect to a crucially important U.S. proposal at the 1946 London Conference to embody new commercial treaty rules, including those expected to be incorporated later in the ITO, in a General Agreement on Tariffs and Trade. It was

[2] For an excellent account of Anglo-American collaboration during this period, see Richard N. Gardner, *Sterling-Dollar Diplomacy*, Oxford: Clarendon Press, 1956.

out of this *ad hoc* memorandum that GATT—the only living remnant of the Havana Charter—was born.

As its origin indicates, GATT was never intended to be a permanent institution. It was, as Richard Gardner aptly put it, "a slender reed . . . permeated with an atmosphere of impermanence." [3] Nor did it encompass one of the important provisions of the Charter. For, while many of the Charter's commercial policy planks found their way into GATT, the provision encompassing full employment policies was left out. The postwar world thus had to limp along on three engines: the IMF, the IBRD and the GATT, with no companion code to supervise and safeguard price stability and employment. To only a minor extent can it be said that the OECD, with its new concept of "multilateral surveillance," completes the necessary quartet.

It is probably not too strong to say that each of the functions to have been performed by the IMF, the IBRD, and the GATT have been performed inadequately, as the UNCTAD conference and other evidence has recently made clear. The IBRD—even when supplemented by its little-sister lending agencies, the IDA and IFC—has provided only a minute fraction of the development aid that has turned out to be desirable. Most critics will agree that even with the quantitatively much more important national programs, the size and quality of resources flowing to less-developed countries is far too small. Moreover, new problems in connection with long-term lending have arisen with respect to debt servicing, host-country privileges, and investor protection. It is apparent that the IBRD has merely scratched the surface of the long-term lending problems posed at the end of the war.

The same is equally obvious with respect to the IMF, which has provided only a small amount of the increase in liquidity in the postwar period, (though the "conditional" nature of the liquidity it provides and the international review to which it is subject enhance its quantitative importance). This has vindicated the view of economists like John H. Williams, who, at the time of Bretton Woods, urged a scheme for key currencies; the postwar payments system naturally evolved into something closer to the Williams proposal than to the system envisaged in the IMF Articles of Agreement. The IMF has been at the periphery rather than the center of international financial activity, although there seems more hope now than ever before that its role may be reinforced in the future.[4]

Paradoxically, GATT, despite its "atmosphere of impermanence," has fulfilled its portion of the postwar functions better than either of the Bretton Woods twins; informality and flexibility seem to have served it in good stead. But it would be absurd to assert that the GATT is not in need of revision at the present time. The UNCTAD conference has brought out its limitations and there seems little question but that in commercial policy, no less than in lending and payments policy, a new order of things is needed.

In the near future, each of these institutions will have to be placed under microscope to see whether its functions can be expanded to fill the vacuum now existing in each of the respective spheres, or whether new institutions will have to be erected. Considerable research has already been done on the twins, but for a long time there has been a serious research gap on the subject of the GATT, partly, perhaps, because of the very

[3] Richard N. Gardner, *op. cit.*, pp. 379-380.

[4] I have elaborated my own approach to international monetary reform in a booklet *The International Monetary System: Conflict and Reform*, Private Planning Association of Canada, Montreal, August 1965.

vagueness and complexity of its *modus operandi*.[5]

It is this gap that makes Gerard Curzon's happily-titled *Multilateral Commercial Diplomacy* so timely and important. The book is the first thorough study of the General Agreement on Tariffs and Trade and its impact on national commercial policies and techniques. Because of the current reappraisal of its organization and the challenge of UNCTAD, it will be indispensable reading for all those involved in policy issues relating to trade, tariffs, and development. Hopefully, it will also be read by those engaged in proposals for reform on the financial side as well, on the sound principle that commercial and financial policy cannot be separated. Professor Curzon, of the Graduate Institute of International Studies in Geneva, brings to this work wide experience as an economist and as correspondent for *The Economist* weekly, as well as familiarity with the English, French and German literature and with the internal documents of the GATT.

The book is divided into three major parts. The first gives the backdrop of commercial policy against which GATT was formed and an analysis of its organization; the second discusses the "pillars of trade liberalization" under the headings of the most-favored-nation clause, customs tariff, and tariff stabilization; and the third section—over two-thirds of the book—analyzes five of GATT's major challenges: quantitative restrictions; agriculture; economic development; commercial policy and aid; economic regionalism; and state trading.

The historical account of commercial policy starts with the Cobden-Chevalier Treaty of 1862 between France and England, which, with its inclusion of the MFN clause, made tariff reductions temporarily fashionable on the Continent. But Dr. Curzon makes a *prima facie* case for the thesis that an impetus for protection had begun soon after the Franco-Prussian War, and that the mounting protectionism after 1918 should be interpreted as a continuation of a trend started decades before, a thesis which merits further research. The rest of the opening chapter traces the development of commercial treaties in the interwar period, and the events, some of which have been noted above, leading to the creation of GATT.

The chapter on organization discusses, *inter alia*, the rules for accession to the agreement (new countries pay an "admission price" in the form of tariff concessions in recompense for reductions already achieved at GATT), the remarkably small cost of the secretariat (less than $1.3 million in 1963), the Council of Representatives, voting procedures, waivers, and research work.

The analysis of the MFN clause is enlightening and important. In the 1930's the clause came under severe attack, even by free traders, because individual major countries that were unwilling to negotiate their tariffs could hold back negotiations between third countries unwilling to grant unilateral concessions to the reluctant country. To be sure, a narrow classification of tariff categories can, and often has, offset the significance of the clause; here Curzon quotes an amusing example (taken from Röpke) of how in the 1904 Swiss-German Commercial Treaty a new tariff position was created for "large dapple mountain cattle or brown cattle reared at a spot at least 300 metres above sea level and having at least one month's grazing each year at a spot at least 800 metres above sea level."(!) Problems of this sort, understandably, also arose in GATT, which adopted the unconditional form of the

[5] Richard Gardner, in his *In Pursuit of World Order*, New York: Frederick A. Praeger, Inc., 1964, p. 149, quotes a comment on GATT to the effect that "only ten people in the world understand it and they are not telling anybody."

clause; a relevant example Curzon quotes concerns whether Portuguese sardines and Norwegian herring imported into Germany are "like products."

In negotiating the General Agreement, it was believed that the escape from the MFN clause through arbitrary classification could be offset by appropriate rules governing tariff categories,[6] and that its major advantage far outweighed any disadvantage due to the reluctance of one major country (such as the United States in the early 1930's) to hold back general tariff reductions; besides, multilateralizing the negotiations weakened the force of the latter argument. The major advantage of the clause, Curzon points out, is its avoidance of "nullification": If one country makes a concession to another, the concession could be nullified if a greater concession were advanced to a competitor unless the first agreement contained the MFN clause. This weighty argument, in conjunction with the traditional advocacy of the clause by the U.S., proved sufficiently persuasive.

The legitimacy of the exceptions to the clause now raises some of the liveliest issues in the Agreement. The major exceptions are for preferences existing prior to the agreement, and for the customs unions and free trade areas. The first exception, of course, arose out of early discussions between the U.S. and U.K. over Imperial Preference; the Agreement in effect works a compromise between U.K. and U.S. prejudices by freezing existing preferences. As it has worked out in practice, general tariff reductions have whittled the margins of preference considerably.

Customs unions and free trade areas raised thornier problems, although they had to be accepted for traditional reasons. In one sense, they represent the apotheosis of discrimination, and may well be challenged as irrational. Economic theory suggests that the greater the degree of preference granted, the more likely is a further increase in the preference to be trade-distorting. On this reasoning, there may be an argument for small preferences stopping short of free trade areas or customs unions. Nevertheless, the alternative of allowing arbitrary preferences is unattractive and would undermine the basic code of nondiscrimination to the point where the exceptions became more important than the rule. The issue is still an open one, however, as pressure for preferences for the products of developing areas mounts.

Tariff bargaining, and the extent to which it has become truly multilateralized in GATT, raise further interesting questions; here Curzon gives a particularly lucid description of the negotiating systems adopted. Under the GATT methods prevailing before the Kennedy Round of tariff reductions, dominant suppliers to a country would make "requests" for tariff reductions, and lists of the requests received by individual importing countries would be sent through the GATT secretariat to all contracting parties; the mutual inspection of request lists would then lead to modifications of requests—already a multilateral feature of the system. After requests have been received and modified, contracting parties prepare "lists of

[6] It is worth noting that the problem of commodity classification, so crucial in tariff negotiations, has not received adequate treatment from economic theorists. Under what conditions is it legitimate to lump commodities together and treat them as composites? Apart from Hicks' law of composite commodities, which is too restrictive to be useful, there has been relatively little theoretical work on the subject of commodity classification, although recent interest in the various concepts of "independence" and "separability" (especially Ivor Pearce's development of the concept of "neutral want association") may fill the vacuum. As it is, problems of classification have been left to the good judgment of statisticians and data-collectors without the aid of economic theory. The problem is one that merits substantial work in between the highest abstractions of utility-choice analysis and the details of data organization.

offers" (to get concessions a country must make some offers), which are then simultaneously exchanged through the secretariat. Negotiations commence, details are called for, tentative agreements are made and lodged with the secretariat until all returns are in. The tentative nature of the preliminary agreements acts as a safeguard against an advantage being withdrawn in the course of further negotiations with third countries.

This fascinating procedure bears close similarity to a *tatonnement* in economic theory (similar in effect to Edgeworth's "recontracting" device). Its apparent complexity evidently did not interfere with its success, although, as Curzon points out, there is no completely satisfactory way of measuring the value of the more than 65,000 concessions granted at the Annecy, Torquay, and various Geneva meetings. However, with the Dillon and Kennedy Round negotiations, the item-by-item method was to be replaced by across-the-board "linear tariff cuts," the subject of much controversy regarding exceptions, all of which are ably discussed in the book.

It would take us too far afield to discuss each of the challenges which Curzon masterfully surveys in the third part. Worth mentioning, however, is the interesting relationship between the removal of quantitative restrictions and tariff reductions. In its early years, the GATT succeeded in reducing tariffs largely because the U.S. was willing to do so, while Europe was able to reduce tariffs because quantitative restrictions made these reductions largely vacuous in the early years. But in the 1950's, as QR's were gradually dismantled, the tariff reductions began to be seriously meaningful in Europe and therefore harder to negotiate. In this connection, it is possible that had the early tariff reductions been more aggressive, as critics suggest they should have been, the widespread use of QR's might have lasted longer: Tariff reductions and the elimination of QR's were probably looked upon as alternatives.

GATT was a disappointment to many because of its failure to grapple adequately with the problems of agriculture. In defense, however, Curzon points out how complicated a mess world trade was in at the end of the war and the great achievements that were made in the field of manufactured goods. He offers his own optimistic view that GATT may well be as successful in freeing trade in agricultural products in the next decade as it has been in the past with respect to manufactured goods.

The overall impression created by the book is one of sound scholarship, careful analysis, and reliable documentation. Curzon is a forceful partisan of GATT, which is fortunate in view of the fact his is the first comprehensive study of the organization. This inclination only becomes a defect in his concluding chapter where he takes up the challenge posed by UNCTAD: A more sympathetic understanding of the frustrations of the less-developed countries might have led to a more receptive approach to the challenges GATT must certainly face up to in the future. There are also defects of organization in a book that creates the impression of being written over a long period of time, and one might have hoped for a longer analytical discussion of discrimination, relations between the IMF and the GATT, border tax adjustments for internal taxes, "surtaxes" for the balance of payments, and the O.T.C. Nevertheless, these omissions detract only slightly from the overall effect.

Curzon has put us all in his debt by showing how remarkably successful was the foundling aborted from the Havana Charter—a success story against the odds if for no other reason that the fact that it never achieved formal status as an international organization.

This study, along with the IMF's forth-

coming 20-year history of the Fund, will do much to provide the background for a general reappraisal of the role of the international economic institutions. Professor Harry Johnson has emphasized that the organization of the world economy is at a crossroads at which the institutions we now have no longer meet the challenges of the day; [7] Dr. Richard Gardner has referred to a "turning point" in world trade.[8] This does not mean that the institutions have outlived their functions, but rather that their houses were built too small for their functions to inhabit them. On the monetary, trade, and lending fronts fresh creative thought is needed, perhaps along with a remembrance that the stillborn employment provisions planned for in the Havana Charter got lost in the shuffle. The past 15 years of prosperity and trade have been unprecedented in modern history. Considerable effort may be required to keep things going that way.

[7] H. G. Johnson, *The World Economy at the Crossroads*, Oxford: Clarendon Press, 1965.

[8] Gardner, *In Pursuit of World Order*, *op. cit.*, Ch. VI.

► JOSEPH J. SPENGLER

"The economic conditions of the people, their habits and temperaments, govern the amounts of the various surrogates, by which each hundred sovereigns is accompanied." [1]

Coin Shortage: Modern and Premodern

The emergence of a coin shortage in the United States, though somewhat dissimilar to earlier coin shortages, recalls former shortages and the theoretical and policy responses they raised. The present paper consists of seven sections, the first devoted to the emergence of the coin shortage in the United States and the response thereto; the second, to modern token coinage; and the third, to relationships between coin and other money. The next three sections deal with monetary phenomena and analyses in historical periods; the fourth section, with the role of subsidiary coinage; the fifth with coinage theory; and the sixth, with earlier coin shortages. Concluding comment is presented in the seventh section.

I. *Emergence of Coin Shortage*

It is not possible to define the extent of a coin shortage with precision, since the indicators of both demand and supply are indirect. Until recently, coins fell into two categories: (1) silver coin including dollars and "subsidiary" coin of lesser denomination, half-dollars, quarters, and dimes; and (2) nonsilver, or "minor," coin, nickles, and pennies. The recent value of the silver in the silver dollar approximated its face value, while that in half-dollars, quarters, and dimes approximated 46.8, 23.4, and 9.4 cents. The profit accruing to the Government from the

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[1] Alfred Marshall, *Money, Credit and Commerce*, London: Macmillan & Co., 1923, p. 57.

transformation of a pound (avoir.) of silver into halves, quarters, and dimes approximated $1.02, $0.99, and $0.98, respectively; this amounts to about 5.4 cents per dollar face value of coin. The corresponding profit per dollar face value of nickels has been about 87 cents; of pennies, about 72.4 cents.[2]

In April, 1964, about 48 billion coins remained in circulation, the remainder of more than 58 billion coins minted since 1792. Coins per capita averaged about 240 in April 1964, and about 280 in 1965. In value per capita, circulation in 1965 was: silver dollars, $2.51; subsidiary coin, $11.70; minor coin, $4.32. Mint production of domestic coin rose gradually from 1,009,179,298 in 1954 to 1,519,779,332 in 1958, and 3,824,699,866 in 1963. Coin production in the fiscal year ending June 30, 1964 was 4,307,341,770; planned production for the ensuing year was about 8 billion.[3]

The impending coin shortage became manifest around 1959. Until then, the amount of coin in circulation had kept pace roughly with the growing money supply, mainly because in 1945-59 coin increased faster than the money supply. Even so, coin lagged behind G.N.P.; the dollar amount in circulation per dollar of G.N.P. fell about 17 percent from 0.58 cents in 1941 to 0.48 cents in 1959.[4] It is not surprising, therefore, that in 1959 some banks reported a coin shortage, and complaints became more numerous in 1960-63, mainly during the Christmas season when demand was at a peak. Despite a pronounced increase in the supply of coin, the shortage had become more widespread by late 1963 and early 1964.[5] Initially, only the outflow of pennies and nickels from Federal Reserve exceeded receipts, by 1962-64 other coins were disclosed to be in short supply, for by then the System had to draw on its inventory of coin when its receipts of coin from banks and the Mint fell short of its outpayment of coin.[6] A leading spokesman for the banking community expressed fear lest "the growth of the economy were to be hampered by lack of small change."[7] The seriousness of the shortage was recognized by the monetary authority.

> We are experiencing a critical coin shortage that can be overcome only by a rapid and substantial increase in production. . . . In recent years demand for coin has grown in unprecedented fashion. . . . The return flow to the Reserve Banks has dwindled. Deliveries of new coin from

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[2] Taken or computed from p. 7 of *Coin Shortage* (Part 1—Preceding Treasury's Crash Coin Production Program), Sixth Report by the Committee on Government Operations, 89th Congress, 1st Session, House Report No. 194, March 22, 1965. This report will be referred to as *House Report 194*. A second report, *Coin Shortage* (Part 2—Treasury's Crash Program—Silver and its Relation to Coin Production), Seventh Report of the Committee on Government Operations, 89th Congress, 1st Session, House Report No. 195, March 22, 1965, will be referred to as *House Report 195*.

[3] *House Report 194*, pp. 7-8.

[4] Percentage increases in the unadjusted year-end money supply and coin were, respectively: 297 and 291 in 1939-1959; 183 and 116 in 1939-1945; and 42 and 81 in 1945-1959. Between 1941 and 1959, G.N.P. (in current dollars) increased 284 percent while the value of coin in circulation rose only 207 percent. These percentages have been calculated from data reported in relevant numbers of the *Federal Reserve Bulletin*, especially Vol. LI, July 1965.

[5] Between December, 1959 and December, 1964, coin increased 47 percent while the money supply increased only 13 percent. *Ibid.*, pp. 936, 977. Coin production in 1960-63 approximated 13,281 million pieces, or 106 percent more than in 1955-58 when about 6,460 million were minted. *House Report 194*, p. 8.

[6] *Ibid.*, pp. 2-3, 8-10. See also *ibid.*, pp. 14-19, on correspondence between the Federal Reserve System and the Treasury Department, particularly the Mint.

[7] First National City Bank, *Monthly Economic Letter*, September 1964, p. 102.

> the mint have risen, but this added supply has been more than offset by the drying up of return flows of coin from circulation. . . . Inventories have fallen to the point where the Reserve Banks have been unable to deliver coins on request, but instead have been forced to ration coins in order to distribute the limited supply on a fair basis.[8]

Coin itself came to command a premium, sometimes as high as 4 percent or more (as high as 8 percent on nickels in New York) by the spring of 1964, when recourse to alternative means of attracting coin had become costly to coin-short firms. This demand and the premium would have been lower, as was pointed out, had the Mint been better prepared to meet requests for coin, but then there would not have been a problem.[9] It is possible also that, had prices risen less, even more coin would have been required, since rising prices increase the relative amount of exchange that larger currency can facilitate.

While the shortage of pre-mid-1965 coins is attributable to both a shortage of coin-producing facilities and a growing dearth of silver,[10] the great upswing in the demand for coin has a number of causes which may be grouped under four heads: (1) growth of population and G.N.P. per capita; (2) new modes of distribution; (3) coin attrition and collection; (4) speculation in coin. Cause (1) operates even though the ratio of coin to G.N.P. is constant, whereas causes (2), (3), and (4) augment this ratio faster than coin-replacing practices (e.g., credit cards, charge plates, use of electronic automatic data processing equipment in payroll preparation) have been reducing the ratio. With a population growth rate of 1.5 percent per year and a per capita growth rate of 3-4 percent per year in G.N.P. (in current dollars), coin requirements might grow 4.5-5.5 percent per year under otherwise *ceteris paribus* conditions.[11]

Cause (2) increases the use of coin whereas causes (3) and (4) divert coin from circulation or otherwise reduce the transaction velocity of coin. As distribution has become more automatic, the need for coin has risen faster than G.N.P. The use of vending machines, telephone boxes, do-it-yourself laundries, changemakers, parking meters, coin-operated amusement devices, etc., has been growing steadily.[12] Toll highways, school lunch programs, and sales taxes have added to the use of coin in distribution.

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[8] Excerpted from a statement of William McChesney Martin, Jr., Chairman, Board of Governors of the Federal Reserve System, in *Federal Reserve Bulletin*, I, July, 1964, p. 838; also *House Report 194*, p. 19. According to the *U. S. News and World Report*, May 3, 1965, p. 56, *A Nation Without Coins*, by C. R. Robinson and C. B. Young, "was gaining attention in Washington" in early 1965 with its proposals for alleviating the coin shortage." See also, *House Report 195*, pp. 2, 27.

[9] *House Report 194*, pp. 10, 12-13, 19; *House Report 195*, pp. 12-13, 18. "Coin and Currency in Circulation," *Monthly Review* of Federal Reserve Bank of Richmond, July 1965, p. 5; also note 23 below.

[10] *House Report 194*, pp. 1, 3-4, 15, 17-19, 31; *House Report* 195, pp. 12-13, 19-22.

[11] According to a consulting firm, coin demand will rise 5.5 percent per year for some years. *House Report 194*, p. 18.

[12] There were about 12 million coin-operated devices in the United States in 1964. While the National Automatic Merchandising Association, representing operators of 4.5 million vending machines, reported sales of over $3.5 billion, it indicated that only $22 million are in the machines at any one time. This volume does not include some 1.2 million pay telephones (into which 4.5 billion coins are deposited annually) or 470,000 "juke boxes" and 35,000 coin-operated laundries. Moreover, automatic distribution and sales probably are still increasing faster than G.N.P. See *House Report* 194, pp. 11-12; *House Report 195*, pp. 11-12, 14; *U. S. News and World Report*, May 3, 1965, p. 57; *New York Herald Tribune*, June 4, 1965, p. 3; *New York Times*, June 4, 1965, p. 18; "Factors Affecting Money in Circulation," *Monthly Review* of Federal Reserve Bank of Richmond, October 1965, pp. 2-7, 10.

Causes (3) and (4) need to be considered together, since the separate effects of attrition, coin collection, hoarding, and the diversion of coin to extra-bank channels are not sharply distinguishable. The number of coin dealers has increased as has the number of coin collectors and speculators, who probably number 8-10 million. Business firms, anxious to have an adequate supply of coins, often hoard them. Wear and tear also consumes coins, the average lifetime of a coin being 25 years.[13]

Speculation in silver dollars and silver coins of lesser denomination (among them the newly minted Kennedy half-dollar, demand for which was swelled by sentiment) was greatly stimulated by the increasing shortage of industrial and monetary silver. Yearly free world silver consumption in 1949-53 approximated 235 million ounces, or 60 million more than were produced. In 1960-64, annual free world consumption, 410 million ounces, exceeded production by about 200 million ounces; by 1964 the deficit had become over 300 million ounces. The Treasury's holdings of silver declined from 1,992.2 million ounces in December 1960, to 1,218 million in December 1964, of which only 17.9 million ounces were free silver bullion, uncommitted to securing silver certificates.[14] It became increasingly probable, therefore, that the price of silver would rise to a level that would make the conversion of silver coins into bullion profitable, with the further possibility that silver coins would disappear from circulation even if, as had been planned, 284 million ounces of silver were minted into coin in 1965, and added to circulation.[15] Silver continued to be exported, and the fear that silver dollars and lesser silver coin would flow into hoards was substantiated in part.[16]

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[13] "Coins yearly lost to circulation by wear, withdrawals by collectors and other causes average about 0.048 for cents, 0.031 for nickels, 0.038 for dimes, 0.022 for quarters, and 0.028 for halves," according to a survey done for the Mint. *House Report 194*, p. 11. See also *ibid.*, pp. 10-14, 21-25; *House Report 195*, pp. 15-19, also pp. 9-11 on efforts of the banking industry to encourage the flow of coin back to banks. See also: "Where's All the Currency?," *Business Conditions*, review of the Federal Reserve Bank of Chicago, August, 1965, pp. 13-16; "The Great Coin Craze," Chase Manhattan Bank, *Business in Brief*, No. 57, July-August, 1964; and "Coin Collecting No Longer a Business of Small Change", Philadelphia (Pa.), *Evening Bulletin*, November 6, 1964, p. 56. In Canada, an emerging coin shortage was attributed in part to the activities of coin collectors. Canada had, however, increased its supply more rapidly than had the United States. See *U. S. News and World Report*, February 15, 1964, p. 15; "Coin and Currency in Circulation," *Monthly Review* of Federal Reserve Bank of Richmond, July, 1965, pp. 8-10. American slot machine operators, prohibited from drilling holes in silver coins, switched to Canadian dollars, which were redeemed from customers. *House Report 194*, p. 10.

[14] President Johnson reviewed the silver situation in his "Message Relative to Silver Coinage", June 3, 1965, 89th Congress, 1st Session, published as *House Document No. 199*. See pp. 1-2, 4-5. See also *House Report 195*, pp. 20-21.

[15] It would pay to convert silver dollars into bullion if the price of silver rose much above $1.293 per ounce; at a price somewhat above $1.38 per ounce, it would be profitable to melt dimes, quarters, and half-dollars. "Silver: Supply and Demand," *Monthly Review* of Federal Reserve Bank of Richmond, April, 1965, p. 2; also V. Clain-Stefanelli, "The Future of U. S. Coinage," *Vital Speeches of the Day*, XXXI, November, 1964, pp. 85-88; "For Want of a Coin," *Business Conditions*, Federal Reserve Bank of Chicago, December 1964, pp. 8-9. As of December 31, 1964, silver coin reported in circulation contained 1,925 billion ounces of silver, *House Report 195*, p. 26.

[16] Exports rose to 99 million ounces in 1964. *House Report 195*, p. 25. "Early in 1964, the Treasury ran out of silver dollars, and they became, in effect, collectors' items." Since 1954, about 273 million silver dollars had disappeared from circulation, and it was anticipated that the 45 million dollars slated to be minted by June 30, 1965 would also be hoarded. The Kennedy half-dollars disappeared from circulation almost as fast as they were minted, in part because they were sought as momentos. See *ibid.*, pp. 19-26; *House Report 194*, pp. 21-25; "For Want

Corrective action has taken three forms. First, efforts were made to step up the average velocity of coins, though to date such efforts have not accomplished much. Under the Coinage Act of 1965, the Secretary of the Treasury was empowered, if a coin shortage threatens, to adopt a proposal made in 1964 not to change the mintage date each year. It is supposed that such action, by diminishing temporal differentiation, will diminish interest in coin collection.[17] Second, under the Coinage Act of 1965, a saving of 90 percent in the silver content of coin was made possible. Coinage of silver dollars was deferred, use of silver in dimes and quarters was discontinued, the silver content of half-dollars was reduced to 40 percent, and the new coins were expressly made legal tender. Third, with the enactment of this law coinage has been stepped up. In the first year, 3½ billion "new subsidiary coins" will be produced, compared with 2 billion in the preceding year; in the second year, 7 billion. Within the third year, production should "reach a point at which we could, if necessary, meet total coinage needs out of the production of new coins."[18] The second and third of these measures could be taken only by a powerful modern state.

II. *Modern Token Coinage*

Let us, with Marshall, divide the media of exchange into two categories, subsidiary money S, and all other forms of money (including large coin), M.[19] Let us further divide S into S_c, whose commodity value approximates its nominal and circulating value, and S_t, whose commodity value falls short of its nominal and (under modern conditions) circulating value. S_t is essentially a modern form of S. In the past, however, S consisted mainly of S_c or approximations thereto, though at times attempts were made to use surrogate media fashioned of paper and other "cheap" materials.

Token coin (i.e., S_t), if it is to function ideally, must possess certain attributes, realizable only if the state monopolizes the coinage of token pieces and effectively guarantees their convertibility or inspires confidence in the maintenance of their purchasing power. This is a task

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of a Coin," *loc. cit.*, pp. 8-9; "A Run on Silver Coins," *U. S. News and World Report*, May 3, 1965, pp. 56-57.

[17] *House Report 194*, pp. 27-28, *House Document 199*, p. 11; Martin *op. cit.*, p. 838. Earlier it had been proposed to stamp all new silver dollars with the date "1935" in order to discourage coin collectors but the 1935 die was found to have been destroyed (*Durham Sun*, September 16, 1964). This type of measure recalls one taken by the British government in Bengal in the late 18th century to outwit the shroffs, or native financiers, who charged discount on old coins, even though they had not deteriorated at all. An invariable date—the 19th *sun* or year of the reign of Emperor Shah Alum—was put on all coins irrespective of the year in which they were minted. See J. C. Sinha, "Economic Theorists Among the Servants of John Company (1766-1806)," *Economic Journal*, XXXV, March, 1925, p. 56 and note.

[18] *House Document 199*, p. 8. Production of the new quarters began soon after the act became law; production of dimes and half-dollars should begin in 1966. *Business Week*, August 7, 1965, p. 29. The new coins fit the needs of the nation's 12 million coin-operated devices. *House Document 199*, p. 6. The reduction of the cost of producing half dollars, quarters, and dimes to 26.5, 1.5, and 0.6 cents, respectively, will greatly increase governmental profits amounting to perhaps $1 billion by 1967. See *Time*, September 17, 1965, p. 39.

[19] "As industry and trade developed, an even more urgent need developed for the coordination of one set of media of exchange that were suitable for large dealings: that need was best met by coins, some made of rare metals and others of common metals. No quite satisfactory material has yet been found for currency of very small denominations." *Op. cit.*, p. 267. Cp. Rowland Hamilton, *Money and Value*, London: Macmillan & Co., 1878, pp. 66-73.

difficult for small states especially vulnerable to the loss of S_c as well as of M to foreign lands and to public and private hoards.[20] Its monetary value must exceed its commodity value, being kept on a par with the latter through explicit convertibility into standard money, or its equivalent,[21] a condition supported by appropriately limiting the amount of token money in circulation and perhaps also its use as legal tender. Its denominational composition as well as its relative importance in the money system should fit the composition of the monetary requirements of the population. Its typical monetary values should be roughly in keeping with just and conventional prices, with the prices of common elements in living budgets, and with common (daily or weekly) rates of remuneration. The absolute and relative amounts in circulation should correspond to the aggregate token-money requirements and the income distribution of the community in which it circulates.[22]

In a strong and stable modern state, it is quite easy to meet the requirements of ideal subsidiary coinage, whether of S_c or S_t form. Changes in requirements are indicated by the behavior of the ratio of the outpayment by the central bank (or comparable monetary agency) of coins to its receipt of coins from circulation and the mint; and disparities between the outflow and the inflow are normally met by modifying central bank inventory holdings and augmenting (reducing) production at the mint.[23] Rising requirements may be met also by the use of bank notes of very small denomination. As will be shown in Section IV, however, it was not possible before the 19th century to meet the requirements of token coinage.

III. *Relationships Between Coin and Other Money*

Marshall's statement (footnote 19) indicates that M and S perform different

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[20] E.g., see C. R. Whittlesey, *Principles and Practices of Money and Banking,* New York: Macmillan & Co., 1954, chap. 11; Neil Carothers, *Fractional Money,* New York: J. S. Wiley & Son, 1930, pp. 304-311; Henry D. MacLeod, *Bimetalism,* 2d. ed., London: Green & Co., 1894, pp. 144-46; H. G. Hayes, "Bimetallism Before and After 1834," *American Economic Review,* XXIII, December 1933, pp. 677-679.

[21] As K. Wicksell suggests, however, the mere "image" of convertibility may suffice. See *Lectures on Political Economy,* II, London: Routledge & Kegan Paul, 1950, pp. 151-152.

[22] Small coin, whether of S_c or S_t form, is of much greater relative importance in low-income than in high-income countries. Thus, around 1930, small currency (mostly S_t) constituted 7.6 percent of all currency in the United States, 11.2 percent in Germany, 16.2 percent in Hungary, and 53.3 percent in Poland. See T. E. Gregory, "Currency," *Encyclopedia of the Social Sciences,* IV, New York: Macmillan & Co., 1931, p. 651; also next note. Small currency, therefore, should have been of very great relative importance in the medieval and early modern period, despite the fact that much exchange was accomplished through barter; in fact, "aristocratic coins" (e.g., florin, ducat) "circulated only among the upper classes and only in special sectors of economic life" in the Middle Ages. See Carlo M. Cipolla, *Money, Prices, and Civilization in the Mediterranean World, Fifth to Seventeenth Century,* Princeton: Princeton University Press, 1956, p. 26; also note 26 below. See also Carothers, *op. cit.*

[23] Of course, when, as in the United States recently, there has been an unprecedented upward shift in coin requirements, supply may not be immediately adjusted to demand. According to Mr. Martin, "the only safe course at this point is to flood the market with coins in order to remove the incentive to hold on to excess coin—normal considerations of cost and efficiency in production are of secondary importance at this time." See p. 839 of reference cited in note 18 above. Until recently, smaller coins made up no larger percent of total currency in circulation than before the War: 7.1 percent in 1939, 4.9 percent in 1947, 7.1 percent in 1949, 8.0 percent in 1963, and 9.2 percent in May 1965. Computed from *Federal Reserve Bulletin,* LI, July 1965, p. 977.

as well as similar functions. Insofar as these functions differ, therefore, *S* becomes an imperfect substitute for *M* and sometimes a complement to *M*. *M* has facilitated large transactions, and *S*, small transactions. *M* also serves a variety of functions unconnected with transactions as such, especially hoarding, storage, and related requirements. *S*, on the contrary, has not usually performed these functions, though recently it has facilitated the accumulation of coin for speculative and emotional reasons. As a rule, while an increase in *M* tends to be accompanied by an increase in the demand for *S*, an increase in the demand for *S* need not signify an increase in *M*.

Just as the growth of demand for *S* does not wholly parallel that for *M*, so is the growth of the supply of *S* subject to somewhat different circumstances than that of *M*. Thus, if *M* consists mainly of managed currency and deposits, whereas *S* consists of metals, the cost of supplying a given amount of money will be lower for *M* than for *S*. Even if *M* consisted mainly of large coin, the cost per such amount could be lower than that of a corresponding amount of S_c. It may be easier, therefore, to adjust the current stock of *M* to the current demand for *M* than that of *S* to the current demand for *S*. Such disparity in the degree of adjustment of stocks of *M* and *S* to current demands would, of course, disappear in proportion as changes in prices, incomes, etc., augmented substitutability between *M* and *S*.

Is every kind of media of exchange a substitute for every other? If this be so, changes in the price or quantity of a given kind affects the demand for other kinds, or their marginal values, in keeping with the rules of substitution.[24] Or may some kinds of money be complements to other kinds?

Let us divide the functions performed by money into two essentially different categories, say small and large transactions labelled *D* and *L*, respectively. Let us then assume that small coin (i.e., S_c and S_t) perform the functions associated with *D* whereas other money *M* performs those associated with *L*. Suppose, furthermore, that functions closely associated with *D* and *L*, respectively, predominate and in effect swamp out other functions that might conceivably bear upon the issue under consideration. Let us assume, finally, that the respective aggregate money value of *D* and *L* functions performed per time period and assessed in Fisherine terms (i.e., as *PT* in a Fisherine equation) ordinarily move quite closely together, mainly if not entirely because increases in *D* and *L* are essentially joint products of the mechanisms generating increases in aggregate output (say Gross National Product).[25]

Given the conditions laid down in the preceding paragraph, *S* and *M* will tend to behave as complements. A possible sequence of events may illustrate this relationship. Suppose *M* is increased by an increment ΔM, the addition of which

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[24] On these rules, see J. R. Hicks, *A Revision of Demand Theory*, Oxford: Claredon Press, 1956, chapters 16-17. Technical jointness or complementarity in "production" is treated by Sune Carlson, *A Study on the Pure Theory of Production*, London: P. S. King & Son, Ltd., 1939, chap. 5; his analysis may be extended to an economy.

[25] The term "ordinarily" is used to rule out the possibility, present in times of war and forced growth, that, with an economy operating at full capacity, a further increase in *L* may entail the absorption of inputs normally devoted to *D*. In this event, further increase of *L* would entail decrease in *D*. Increase in particular components of G.N.P. may also affect *D* more than *L* and thus affect the relative "scarcity" of *S* more than that of *M*. Illustrative of this possibility is a portion of the increase in coin requirements described in Section I.

lowers the price P_m of M. This price reduction generates an increase ΔL in L activities. If L expands, D will be stimulated to expand, say by ΔD. The addition of ΔD entails an increase in the monetary functions specifically associated with D and performable by S; hence S must be increased by ΔS, or the velocity of S must increase. Initially, the absence of an increase ΔS in S, or a counterbalancing increase in the velocity of S, will entail the rationing of S or what amounts to an increase in the real price P_s of S. For users of S would be willing to pay something to avoid disadvantages associated with a "shortage" of S. In short, an increase in M sets in motion a sequence that eventuates in an increase in the demand for S. Presumably, the relation between S and M is symmetrical, though in the main M and L perform active roles while S and D perform passive roles. At most, an increase in S would eventuate in only a very minor increase in M and L.

The argument presented in the preceding paragraph may be valid only within limits. Let us postulate a standard unit K (or its equivalent) into which S (especially S_t) is convertible. Should reduction in a community's M reduce its need for S, there would develop an increasing tendency not only to hoard S but also to convert it into M which could then be hoarded or used externally along with such units of S as might find external use. Similarly, should an increase in M increase need for S and hence its scarcity, the tendency to hoard S would decline while the incentive to counterfeit it or to convert M into foreign substitutes for S would increase. In short, though within limits the causal relation $M \rightarrow S$ is complementary in form, movement outside these limits may change this form into a substitutive one, provided that direct or indirect convertibility is possible and profitable. The locus of these limits depends upon the costs of converting S into M and upon the value of the convenience, time saved, and other advantages associated with having as much S as is needed and, when possible, an additional amount to function as a standby against anticipated increase in need for S.

If we subdivide S as before into S_c and S_t, S_t will behave as a complement even more than S_c, since the capacity of S_c to perform functions normally performed by M is less limited than the corresponding capacity of S_t. It is possible, as we note in Section V, that what has been said in this section will illuminate the attitude of mercantilists toward certain monetary phenomena.

IV. *Pre-Nineteenth Century Subsidiary Coinage*

It was not easy, before the 19th century, to meet the requirements of an ideal subsidiary coinage, whether S_c or S_t in form, despite its great importance.[26] Ideological as well as material obstacles were encountered, with the result that "for five centuries (1200-1700) the monetary policies of Europe vacillated between the high idealism of a naive commodity theory and crude practical expedients designed to maintain an equilibrium between gold, silver, and vellon, or to fill empty treasuries with the proceeds of unblushing monetary depreciation"; the persistence of the commodity concept of

[26] What Cipolla writes respecting the Middle Ages must have continued to be true long after. "'Petty coins' had . . . a far greater role than, for instance, pennies, dimes, and quarters have in the present American economy. The price and wage levels in terms of silver were very much lower than today and retail trade was on a very small scale. Therefore, small coins were nearly the exclusive means of payment in local petty transactions. Wages were also usually fixed and paid in petty coins." Wages were low and the use of petty coins was not subject to effective legal tender regulations, though merchants and entrepreneurs insisted on payment with the large gold coins, which also served as units of account. *Op. cit.*, pp. 34-35, 38 ff.

money "as an ideal obstructed and delayed the development of a workable system of redeemable token money."[27]

Material obstacles to the introduction of an ideal subsidiary coinage were more important, however, than the ideological. These obstacles assumed two forms. (1) The relative cost of minting petty coins was much greater than that of coining gold or even silver, with the result that private moneyers with minting privileges usually found it much less profitable to produce petty coins than gold and silver coins.[28] (2) The typical state apparatus was too weak to compel acceptance at face value of token coin when the value greatly exceeded its worth as metal, or to prevent the counterfeiting which a large difference might evoke, or to make use of paper token money.[29] As a result, shortages of petty coin developed unless moneyers stood to make a speculative profit, an objective most likely to be achieved in the interval between when governments debased petty coins and when the resulting overissue finally depressed their value enough to eliminate the profit and check their further coinage.[30] Wear and tear, "clipping, rounding, filing, washing," also tended to reduce the quality, the purchasing power, and the quantity of both petty coin and some nonsubsidiary media.[31] Rising prices frequently re-

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[27] A. P. Usher, *The Early History of Deposit Banking in Mediterranean Europe*, I, Cambridge: Harvard University Press, 1943, p. 196. St. Thomas Aquinas and other of the early Schoolmen failed to distinguish sharply between nominalist and commodity conceptions of money. Howard S. Ellis, *German Monetary Theory 1905-1933*, Cambridge: Harvard University Press, 1934, chapter I, especially pp. 7-8. See also A. E. Monroe, *Monetary Theory before Adam Smith*, Cambridge: Harvard University Press, 1923, pp. 26-31, 53, 114 ff., 124; René Gonard, *Histoire des doctrines monétaires*, I, Paris: Librairie du Recueil Sirey, 1935, pp. 34 ff.

[28] Usher, *op. cit.*, pp. 197-198; Cipolla, *op. cit.*, p. 28.

[29] E.g., see Douglas Vickers, *Studies in the Theory of Money 1690-1770*, Philadelphia: Chilton Co., 1959, pp. 81, 89 on N. Barbon; P. Grierson, "Mint Output in the Tenth Century," *Economic History Review*, IX, April, 1957, pp. 464-465; but see also J. D. Gould, "The Royal Mint in the Early Seventeenth Century," *ibid.*, V, No. 2, 1952, pp. 240-248. Even in China, the government could not cope effectively with the forces making for the overissue of paper money. See F. Hozumi, "The Chinese Ideas of Money," *Kyoto University Economic Review*, XVIII, January, 1943, pp. 54-57. See also E. F. Heckscher, *Mercantilism*, rev. ed., II, New York: Macmillan & Co., 1955, p. 354. Nicolas Copernicus, in his *Monetae eudendae ratio* (1526), indicates it was impossible for the ruler to regulate the value of coins; he could only guard their weight and purity. See MacLeod, *op. cit.*, pp. 8-14. In recent times, according to T. E. Gregory, "a small note circulation is disproportionately expensive . . . and . . . there is little to be said for it on grounds of convenience." *Op. cit.*, p. 650.

[30] Cipolla, *op. cit.*, pp. 28, 32-33; Usher, *op. cit.*, pp. 203-04.

[31] See William Lowndes's comments discussed in Vickers, *op. cit.*, pp. 70 ff. "Before the introduction of milled edges, the loss from wear was very heavy. The evidence of the mint officials estimated it at about 20 percent in the early years of Richard II, when there had been no coinage of silver on a large scale for nearly 36 years, and there was a great lack of half-pence and farthings. Their estimate may have been too high, but the deterioration must have been considerable." So writes Charles Johnson in his introduction to *The De Moneta of Nicholas Oresme and English Mint Documents*, New York: Nelson, 1956, p. xi. The period under discussion is the late 14th century. See also Gonnard, *op. cit.*, Part II, chapters 1-2. Several coins remained relatively immune to these deteriorating forces, in part because "good money" was considered a "persuasive ambassador" and an index of a state's power. See R. S. Lopez, "Back to Gold," *Economic History Review*, IX, December, 1956, p. 237; Karl-Friedrich Läge, *Secular Inflation*, Dordrecht: D. Reidel, 1961, pp. 4-7; Cipolla, *op. cit.*, chap. 2; A. S. Ehrenkreutz, "Arabic Dīnārs Struck by the Crusaders," *Journal of the*

enforced the impact of debasement upon petty coin; but they may have sometimes offset this effect by depreciating the value of somewhat larger small coins and reducing their status to a level at which they became competitive with petty or token coin.

The high cost of producing petty coin (which might have slowed down its supply even if the state had monopolized minting) long tended to make their supply inelastic under existing circumstances. According to M. Palyi, mechanical methods of minting, though of 16th-century origin, did not come into general use until the 17th century; the cost of producing coin still amounted to 10-20 percent of its value a century later, remaining especially high in respect to coins of small monetary value. In the 19th century, however, "modernization of minting technique" finally solved "one of the most pressing of the early monetary problems, the shortage of coin." It rendered the cost negligible, made the supply elastic,[32] and, by always making coins uniform in shape and content, eliminated many of the causes of recoinage.[33] These advantages were extended to token and other petty coin as well,[34] the total cost of which is a very much smaller fraction of their monetary value under modern than under premodern conditions. This cost reduction served, along with the increasing power of the modern state, to make use of token coin feasible.

V. *Early Theorists and Coinage*

Aspects of coinage problems early commanded the attention of medieval writers, among them the nominalists who were inspired by Aristotle's comments suggesting that money and its value might rest on convention. Aristotle thus implied that the role of S might be performed by S_t.[35] Early writers touching upon monetary questions were slow, however, to concentrate attention upon the nature of coin suitable for the conduct of small transactions. Interest in coinage systems, Monroe believes, "did not develop until after the Middle Ages,"

Economic and Social History of the Orient, VII, July, 1964, pp. 167-182. With the rise in prices in the 16th century, however, gold coins became more widely distributed and thus lost "the character of 'aristocratic money'," Cipolla, *op. cit.*, p. 37. For an authoritative account of the history of coinage in England see Rogers Ruding, *Annals of the Coinage of Great Britain*, 6 vols., London: Lackington, Hughes, Harding, Mavor & Jones, 1819.

[32] A 19th-century minting machine could produce 100,000 perfect coins per day, whereas in 17th-century Prussia "8400 badly stamped groschen were considered a good day's work." See M. Palyi, "Coinage," *Encyclopedia of the Social Sciences*, III, p. 623.

[33] *Ibid.*, pp. 622-25. See also Usher, *op. cit.*, pp. 221-231; Gonnard, *op. cit.*, pp. 83-102. Improvements in coinage may also have facilitated the centralization of minting in the hands of the state and hence the standardization of coin. On the bulkiness of coinage plants see Marshall, *op. cit.*, p. 55 and n.

[34] No reference has been made to the leakage of petty coin into domestic hoards or foreign lands. It was mainly coin other than petty or subsidiary coin that moved abroad when undervalued, or that passed into domestic hoards. Grierson suggests also that domestic hoards absorbed too small a fraction of the annual output of mints to contribute significantly to a shortage of better coin. *Op. cit.*, p. 466. The existence of a moderate seignorage put a premium on some coin and thus retarded its conversion into bullion. See De Roover, *op. cit.* in note 45 below, p. 83.

[35] Plato's term was translated by B. Jowett as "money-token." See Plato's *The Republic*, Book II, 371B, in *The Dialogues of Plato*, New York: Random House, 1937. See Ellis, *op. cit.*, chap. i, especially p. 7, on nominalist and commodity theories of money, both of which were present in Aristotle's writings. See also Monroe, *op cit.*, pp. 26-31, 53, 114 ff., 124; Gonnard, *op. cit.*, I, p. 34 ff.; A. W. Marget, *The Theory of Prices*, II, New York: Prentice-Hall, Inc. 1942, pp. 10-12.

probably because difficulties "presented by debasement occupied the attention of the Schoolmen so fully." [36]

This concern and the corollary medieval emphasis upon a commodity theory of money prevented the Schoolmen from discovering the role of token money in a coinage system.[37] That the money supply must be adequate, a condition adversely affected by the disappearance of some moneys (though probably not small coins) from circulation, was insisted upon.[38] The need for petty coin was noted also, but not that it should be token in nature. Nicole Oresme, writing about 1355, pointed to the need for alloyed money, "which is suitable for petty dealings."[39] This need was recognized in the 16th century by Bodin who favored small copper coins, and just before and in the early 17th century by a number of writers (e.g., Bornitz, Montchrétien, Barbon), some of whom (e.g., Thesauro, Serra) indicated that the volume of petty coins should be kept adjusted to the requirements of "petty trade." They failed, however, to specify how these requirements were to be measured, a problem not solved even by Montanari when, in the latter half of the 17th century, he wrote that "it is not necessary for a prince to strike petty coins having a metallic content equal to their face value, provided he does not strike more of them than is sufficient for the use of his people, sooner striking too few than striking too many." Even so, Monroe believes, some of these writers "suggested in a tentative way two of the restrictions now imposed on subsidiary money—limited legal tender and limited coinage."[40] In the 18th century a number of writers gave some attention to the need for small coins and the nature of the dependence of their value and of their continued circulation upon the amounts in which they were issued and the limitations surrounding their legal tender status.[41]

It is, as Heckscher has remarked,[42] surprising that the mercantilists devoted so little attention to the question of the shortage of coin (i.e., S), given their fear lest M, if not in short supply, was about to become so. For it was essential in

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[36] *Op. cit.*, pp. 62, 36 ff.; also Gonnard, *op. cit.*, pp. 103-140, and 28-51 on Greek and Roman notions, some of which influenced medieval theory.

[37] "The development of a true single standard involved the establishment of a clear-cut distinction between token money and standard money. This concept was essentially foreign to medieval and early modern thought. Provisions for limited legal tender and for the redemption of token money in standard money . . . involved qualifications of the naive commodity concept which were slow to gain any vital hold upon medieval or early modern thought." See Usher, *op. cit.*, pp. 231-232.

[38] Monroe, *op. cit.*, pp. 36-39, 96, 189.

[39] See Johnson, *op. cit.*, p. 7, chap. 3, of Oresme's *A Treatise on the Origin, Nature, Law and Alterations of Money;* also Emile Bridrey, *La théorie de la monnaie au xiv^e siècle; Nicole Oresme*, Paris: V. Giard & E. Brière, 1906, pp. 209-218, 226-230.

[40] *Op. cit.*, pp. 62, 96-98; Gonnard, *op. cit.*, pp. 191, 197-198, 217-218, 247, 258, 263; Cipolla, *op. cit.*, pp. 28-30. Spain, Venice, and the Papal States sought to regulate the amount of petty coin minted. *Ibid.*, p. 31; Usher, *op. cit.*, pp. 198, 232. In England in the early 17th century the concern of writers regarding the efflux of treasure seems to have diverted their attention from problems associated with petty coinage. See B. E. Supple, *Commercial Crisis and Change in England 1600-1642*, Cambridge: Cambridge University Press, 1959, p. 221; W. A. Shaw, *Select Tracts and Documents Illustrative of English Monetary History 1626-1730*, London: G. Harding, 1936; J. R. McCulloch, ed., *Old and Scarce Tracts on Money* (1856), London: P. S. King & Sons, Ltd., 1933, and *Early Tracts on Commerce* (1856), London: Cambridge University Press, 1952.

[41] Monroe, *op. cit.*, pp. 188-193, 250-251; also relevant papers reprinted in Shaw, *op. cit.*, and McCulloch, *op. cit.*

[42] "On the whole, it is a source of surprise that scarcity of money in the material sense played so small a part in the principal mercantilist doctrines." *Op. cit.*, II, p. 223.

general, they believed, that a nation's money supply be ample, so as to keep the interest rate low, avert deflation, and meet the needs of monetary convenience, finance, liquidity, etc.[43] They wished to avoid falling prices and on occasion to experience rising prices, and they sought a favorable balance of trade, believing it facilitated the accumulation of mobile metallic "wealth," which they frequently identified as capital.[44] They failed, however, to give precise and uniform meaning to their notions of "scarcity" of money.[45] Moreover, Heckscher believes, they did not attach much importance to the "scarcity" of subsidiary or token coins as such. Only in the early period of mercantilism were "searching discussions" of coin shortages "connected with a claim for an increase in precious metals, and even then they were frequently led to a demand for coinage depreciation or to other measures regarding coinage policy, rather than to real mercantilist proposals." Indeed, not even concrete events prompted such writers as Mun and Child to stress a shortage of coin independently of their emphasis upon "want of money."[46] This suggests that even though they were concerned about shortages in the supply of coin for ordinary transactions, this concern was swamped by a greater concern for the supply of treasure.[47]

It is not clear in what measure, if at all, the relationship of S to M was complementary rather than substitutive in the eyes of writers on monetary issues. Presumably the movement of prices in Western Europe was dominated by the movement of M which carried them upward roughly from around the mid-12th to the late 14th century, and again from the late 15th century to the mid-17th century and from the mid-18th century to the early 19th. Prices moved downward only from the late 14th to the late 15th century, again from around 1660 to around 1745, and finally after 1870.[48] Not all prices moved closely together. Price systems have always been somewhat inflexible. Some prices were sticky in the short run, especially those in the handicrafts where guilds or similar organizations have usually emerged, as they did, for example, in Europe, the Middle East, and much of Asia. The emergence of such organizations has been highly

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[43] Heckscher, *op. cit.*, II, Part II, chapters 2-3; my "Mercantilist and Physiocratic Growth Theory," in B. F. Hoselitz, ed., *Theories of Economic Growth*, Glencoe: Free Press, 1960, pp. 33-42. J. D. Gould, "The Price Revolution Reconsidered," *Economic History Review*, XVII, No. 2, 1964, pp. 249-266, esp. 250-251.

[44] Jacob Viner, *Studies in the Theory of International Trade*, New York: Harper & Brothers, 1937, pp. 15-50; Heckscher, *op. cit.*, II, pp. 199-261, 224 ff.; Gonnard, Part III, chapter 2. The supposed need to augment employment, prompted by the belief that there existed considerable unemployed resources, also helped to shape some mercantilist monetary theory and might have had a bearing upon discussions of the role of subsidiary coin. E.g., see Douglas Vickers, *op. cit.*, passim.

[45] Raymond de Roover, *Gresham on Foreign Exchange*, Cambridge: Harvard University Press, 1949, pp. 107, 156, 188, 84 n.

[46] Heckscher, *op. cit.*, II, pp. 221-224.

[47] B. E. Supple points out that the leading early 17th-century mercantilists were not interested in developing a theory of foreign trade, as historians of thought occasionally imply, but "were at times almost exclusively concerned with problems of an efflux of treasure because these problems demanded urgent attention." See Supple, *op. cit.*, Chapter 9.

[48] W. L. Thorp and G. R. Taylor, "Prices." *Encylopedia of the Social Sciences*, XII, New York, 1934, pp. 376-378. Also Läge, *op. cit.*, and Gonnard, *op. cit.*, Part III, chap. 1. The above dates are rough and vary somewhat from country to country and in degree of change in price level. The post-1870 decline is of little import for the present discussion, since it was attributed to insufficiency in the supply of precious metals and not to a scarcity of subsidiary coin. See Charles Rist, *History of Monetary and Credit Theory*, London: G. Allen & Unwin, Ltd., 1940, pp. 121-122. See also Gould, "Price Revolution, *loc. cit.*

probable whenever, as in the risk- and uncertainty-ridden economies of medieval Europe, stabilization of prices has become a generally approved object of policy, supported by thisworldly and otherworldly sanctions as well as by the doctrine of just price.[49]

How would commentators on coin respond to price movements? Were *M* to increase and prices to rise, one would expect an increase in complaint of coin shortage should *S* be complementary to *M*, but not if *M* were a substitute for *S* and capable of performing functions connected with an increase in *D* or small activities. Were *M* to decrease and prices to fall, one would expect little complaint of coin shortage were *S* complementary to *M*, though, given sticky prices, there might be complaint of a reduction in sales; but, were *M* a substitute for *S*, one would expect an increase in complaint of lack of coin, since *S* would replace *M* and hence be less available for small trade, especially at sticky prices.

VI. Early Complaints of Coin Shortage

Complaints of shortages of coin (i.e., *S*) for the conduct of small transactions, as distinguished from later complaints (especially among mercantilists) regarding the shortage of *M* were frequent in the Middle Ages and apparently in later periods down to the 19th century.[50] Indeed, given the fluctuating character of the supply of small coin and consequently recurring periods of small coin shortages, together with the inelasticity of the supply of precious metals for coinage, it was only the debasement of petty coins in the Middle Ages that kept their "supply reasonably elastic," Cipolla concludes.[51] There are reports of shortages of coin and small change in Genoa, Lombardy, and Tuscany in the 13th century,[52] and in Catalonia in and before the 17th century.[53] In England in the early 1620's,

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[49] On guild curtailment of competition and on the use of price controls—policies eventually weakened by mobility of labor, the dispersal of economic activities, and other change-producing forces—see M. M. Postan *et al*, eds., *Cambridge Economic History of Europe*, III, Cambridge: Cambridge University Press, 1963, chapters 4-5; on price stickiness in medieval and early modern times, see Gonnard, *op. cit.*, p. 201; De Roover, *op. cit.*, pp. 68, 107, 202, 267, 270; Supple, *op. cit.*, pp. 245, 247-248.

[50] In the Middle Ages, and even thereafter, opposition to falling prices was not universal. On the one hand, two seemingly contradictory price objectives often were endorsed, cheapness of foodstuffs and dearness of handicraft or industrial products. Heckscher, *op. cit.*, II, p. 228. On the other hand, workers looked with disfavor on rising prices. They favored stable prices and even falling prices, believing these favorable to the maintenance or the increase of real wages, a decline in which they sometimes associated with the debasement of petty coins or increase in their number. Cipolla, *op. cit.*, pp. 34-36. This last position is supported by Marshall who drew attention to the wage-reducing impact of debasement, a form of policy to which, he believed, improvident rulers were particularly prone. *Op. cit.*, pp. 54-56, 237. For detailed accounts of vellon debasement and inflation in Spain, 1598-1650, see Earl J. Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650*, Cambridge: Harvard University Press, 1934, chapter 4, 10, also chapter 12 on the response of wages.

[51] *Op. cit.*, pp. 32-33. See also Gould, "The Royal Mint," *op. cit.*, and Vicker's discussion of Sir Dudley North's opinion regarding the circulation of clipped coin, *op. cit.*, pp. 101-102, also p. 72 on Locke, and p. 223 on Hume.

[52] R. S. Lopez, *op. cit.*, pp. 231-232. Grierson, commenting on another paper by Lopez, states that coined money was more plentiful in the 11th and 12th centuries than Lopez believes, but does not deny the possibility of a shortage. *Op. cit.*, p. 466. On Valencia see Hamilton, *op. cit.*, pp. 106-107.

[53] Usher, *op. cit.*, p. 232; R. S. Smith, *The Spanish Guild Movement*, Durham: Duke University Press, 1940, pp. 59, 102. It is not clear if small coin is referred to, since slowness of coinage was held responsible for part of the shortage in Barcelona. Copper and vellon coins were used to meet the small coin shortages in various Catalan cities. Usher, *op. cit.*, p. 232. In the early 17th century debased vellon dis-

a shortage of coin developed when, because the Mint ratio was too high, the minting of silver coin virtually ceased and the heavier coin moved abroad.[54] This condition, together with others, reduced "the amount of coin available for everyday transactions" and produced an intermittently deflationary movement (reminded of the shortage of silver coin experienced a century later when the status of silver had declined almost to that of a subsidiary currency). This movement was rendered painful by the stickiness of the price-income structure, a condition encountered in England then as in other lands at various times.[55] The shortage of petty coin in 17th-century England was relieved in part through the use of tradesmen's tokens and copper currency subject to certain legal tender limitations.[56]

In the first half of the 18th century there was widespread complaint in England, "both of shortage of coins of small denomination, and of the deficiency of the weight of such of these coins as remained in the currency." Employers had to spend much time "riding about the country in search of cash with which to pay wages." Some even sought relief in the manufacture of "their own token coins."[57] Later in the century—in 1773 and occasionally thereafter—manufacturers issued small bills and promissory notes as sometimes did banks to relieve shortage of coin and facilitate payment of wages, etc.[58] Given the persistence into the 18th century of the belief that it was too risky to issue fiduciary coins,[59] it is not surprising that solution of the token-money problem came finally only in the 19th century.[60]

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placed silver in Castile. Hamilton, *op. cit.*, pp. 211-212.

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[54] Gould, "The Royal Mint," *op. cit.*, p. 242, also pp. 241-248, where it is reported that the total amounts coined fluctuated greatly from year to year. See also MacLeod's account of bimetalism in England. *Op. cit.*, pp. 16-61.

[55] See Supple, *op. cit.*, pp. 8, 13-14, 31, 56, 163 ff., 177-180, 192-193, and "Currency and Commerce in the Early Seventeenth Century," *Economic History Review*, X, December, 1957, pp. 244-245, 247-248, 252-253; Heckscher, *op. cit.*, II, p. 228; J. K. Horsfield, *British Monetary Experiments 1650-1710*, Cambridge: Harvard University Press, 1960, pp. xii, 26; Gonnard, *op. cit.*, p. 201; De Roover, *op. cit.*, pp. 68, 107, 202, 267, 270. It was the outward drain of England's monetary supplies rather than shortages of small change that mainly concerned English commentators. See Supple, *op. cit.*, p. 252; E. A. J. Johnson, *Predecessors of Adam Smith*, New York: Prentice-Hall, Inc., 1957, chapter 2-5, passim.

[56] Usher, *op. cit.*, pp. 232-233.

[57] T. S. Ashton, *An Economic History of England*, London: Methuen, 1955, pp. 171-175.

[58] *Ibid.*, pp. 186-188, 207-208; also p. 198 on the dehoarding influence of the growth of the supply of securities. Sir James Steuart had treated credit creation as an offset to money hoarding. See Vickers, *op. cit.*, pp. 276-277.

[59] Monroe, *op. cit.*, pp. 189 ff.; see also Vickers, *op. cit.*, pp. 276-277; Carothers, *op. cit.*

[60] Complaints about coin shortage were not confined to Europe. In parts of India undergoing British exploitation, the chiefs of the leading Agency Houses wrote to Lord Cornwallis: "The quantity of specie now in circulation is inadequate to the current business of the settlement." Sinha. *op. cit.*, p. 54; also p. 47, where Sinha states that in the mid-18th century "even the silver rupee was of too high a denomination for ordinary transactions." In the second half of the 19th century, a shortage of token coin developed when silver ceased to be the standard coin and token coin began to be used as nontoken coin. See W. F. Spalding, *Eastern Exchange Currency and Finance*, 4th ed., London: I. Pitman & Sons, 1924, pp. 21-22. In China there was complaint at times of "monetary famine," when coins were in short supply. Hozumi, *op. cit.*, pp. 54-55. On China see also W. Vissering, *On Chinese Currency and Paper Money*, Leiden: E. J. Brill, 1877. In ancient Rome token coin was sometimes in deficient supply. See C. H. V. Sutherland, *Coinage in Roman Imperial Policy*, London: Oxford University Press, 1951, pp. 11, 200-201; Sture Bolin, *State and Currency in the Roman Empire to 300 A. D.*, Stockholm: Almquist & Wiksell, 1958, chapter 10.

Even though the technical problems of striking coins in quantity vanished in the 19th century, problems associated with discrepancies between mint value and market value of precious metals by no means disappeared. Countries attempting to maintain bimetallic monetary standards were continuously plagued with coin shortages. Indeed, in the United States as in England, "it was the crying need for an adequate small change currency that led to the gold standard and a subsidiary silver currency."[61] In the United States, for example, a dearth of small coin of suitable denomination persisted; per capita circulation of coins below the half-dollar was under 25 cents in 1830. The currency reform laws passed by Congress in 1834 and 1837, however, under-valued silver at the mint. Fortunately, the coinage of silver was not at first significantly discouraged, there was little hoarding, and silver imports generally exceeded exports until in the late 1840's. Then, as the value of silver rose in terms of gold, hoarding increased and net silver exports rose until in the early 1850's silver coinage fell to small proportions. In 1853, therefore, Congress abolished the free coinage of half-dollars, quarters, dimes, and half-dimes, reducing their silver content some 7 percent and making them fiduciary. Silver coinage increased greatly, coins stayed in circulation, and coin shortage was eased.

But with the onset of the Civil War, coinage difficulties once again became acute. With the suspension in 1861 of specie payments by both commercial banks and the Treasury, paper money, including Greenbacks, was nonconvertible. Since the Government refused to nationalize gold, paper currency in a free market depreciated in terms of gold, and subsequently even the subsidiary silver coins went out of circulation. The Government went so far as to use ungummed postage stamps and a fractional paper currency to meet the need for change, and not until the 1870's did the problem disappear again.

VII. *Conclusion and Interpretation*

Coin shortage is not a new phenomenon, but one that has frequently manifested itself since ancient times. Its emergence in the contemporary world is associated with a marked upswing in the demand for coin; ordinary increases in coin requirements can easily be met, given the powerful modern state and the low cost of token coin. In the past, on the contrary, it was inelasticity of supply that made for coin shortage; given a weak state and the costliness of coinage, recourse to token money was unlikely to succeed, while recourse to essentially full-bodied small coin was likely to be followed by loss of this coin to foreign countries.

The current coin shortage is both similar and dissimilar to earlier coin shortages. First, and of greatest importance, today subsidiary money consists almost entirely of forms whose commodity value falls quite short of its nominal or circulating value. This disparity between commodity and nominal value is sanctioned by current ideology and current theory, since contemporary governments are strong enough to keep the exchange value of these forms abreast of the value of the standard unit. Second, in times past, subsidiary money, whose commodity value approximated its nominal value, helped in some (albeit minor) measure to fatten hoards intended to meet liquidity, security, and related needs. Today, however, the collection and/or hoarding of subsidiary coin whose commodity value approximates or is likely to approximate its nominal value is animated by the prospect of speculative gain and sometimes

[61] Carothers, *op. cit.*, p. 16. In this paragraph, I draw on his detailed history of our fractional money.

also by emotional and eudaemonic motives. Third, today the supply of both subsidiary and nonsubsidiary money is much more elastic than formerly, when commodity money was important if not predominant and the cost of producing coin of all sizes was relatively great. Fourth, the current coin shortage, although accentuated by the growth of nonsubsidiary money and the Gross National Product, is associated mainly with increases in particular uses of subsidiary money (e.g., automatic vending, speculation, collection); in the past, by contrast, coin shortage in particular lands was associated mainly with increases in economic activity, sometimes coupled with loss of subsidiary money to other lands. Fifth, mercantilist literature illustrates how concern with one issue, supposed dearth of media of exchange in general, obscured another, dearth of small coin. In the mercantilists' system, it was nonsubsidiary money rather than subsidiary money that supposedly fostered their ends. Sixth, today, much more than in the past, small coin is complementary to, rather than substitutive for, other moneys.

► PHILLIP CAGAN

Measuring Quality Changes and the Purchasing Power of Money: An Exploratory Study of Automobiles

I. *The Problem of Product Quality in Price Indexes*

The accuracy of price indexes for measuring changes in the purchasing power of money has been widely criticized in recent years. One reason for criticism is the lack of adjustment for quality improvements.[1] A price index that makes no allowance for those improvements will persistently overstate the rise in price of a fixed bundle of goods and services—a bias that handicaps the evaluation of monetary policy and the measurement of economic growth.[2] And

Philip Cagan is a member of the research staff at the National Bureau of Economic Research. Most of this study was done in 1962-1963 when the author held a Ford faculty fellowship at Brown University. Mr. Cagan wishes to thank the Ford Foundation for financial assistance and the Brown Computing Laboratory for computational assistance.

[1] In terms of the factors responsible, quality changes are of two general kinds: (1) Changes in product value matched by changes in direct or imputed costs. The use of more labor and material to produce a larger or more elaborate product is an obvious example. Similarly, a decline in workmanship can be imputed to reduced input of labor or management; with unchanged money wages and salaries, those costs in real terms increase. (2) Changes in product value with the same resource inputs, reflecting technological innovations in the product or in the means of production.

The methods discussed here cannot distinguish between these two kinds of quality change.

[2] See E. F. Denison, "Theoretical Aspects of Quality Change, Capital Consumption, and Net Capital Formation," Conference on Research in Income and Wealth, *Problems of Capital Formation*, National Bureau of Economic Research, 1957, pp. 215-226; and R. A. Gordon, "Differential Changes in the Prices of Consumers' and Capital Goods," *American Economic Review*, LI, December 1961, pp. 937-957.

quality changes in products and services appear to be occurring more rapidly than ever before. Techniques to adjust for them are still in the horse-and-buggy stage.

A new method of estimating quality changes in automobiles is explored here. Because automobiles are an important item in consumer expenditures and instalment credit, their quality has a general interest as well as a special importance to price indexes. The main reason for focusing on automobiles here, however, is that secondhand prices are available for them, which the new method requires. Because of that requirement, the method has practical limitations preventing its universal application, but it provides a valuable independent check on other methods which are more practical but whose accuracy is open to question.

A. Standard Methods of Handling Quality Changes

Methods now used to adjust for quality changes select a few relevant and known physical characteristics of the product and hold these constant over time or adjust for changes in them.[3] Compilation of the Consumer Price Index follows that procedure, though to a very limited extent. Such characteristics might be size or weight of durable goods, B. T. U.'s of heating fuels, nutrient content of fertilizers, and so on. Such adjustments, if carefully done, can be extremely useful. They have the obvious deficiency, however, of measuring quality by an arbitrary list of factors, not necessarily those given most weight by the public. Moreover, they can be hopelessly outmoded in dealing with a radically new product.

A more sophisticated variant of the approach is the "hedonic" price index used by Court and recently revived by Stone and Griliches.[4] Although here the physical characteristics of the product are pre-selected, their relative weights are determined by cross-section regressions using the prices of different varieties of the product at each point in time. That lets market conditions determine the weights. In his application of the method to automobiles, for example, Griliches regressed the price of new automobiles of each model year on their length, weight, horsepower, and other properties. The regression coefficients served as weights to compute an average price change from one year to the next after adjustment for changes in those characteristics. Theoretically any number of characteristics could be included, with the regression determining their relative importance, though in practice data can usually be obtained for only a few. A source of error here is that many engineering improvements and alterations in design, as well as the quality of workmanship, cannot be readily quantified. The regressions will give inaccurate estimates if the included and the relevant, excluded quality changes are not closely related. Also, list prices set by the manufacturers may not accurately reflect quality differences, though that deficiency could be rectified

[3] For recent commentaries on the problems of this procedure and suggested improvements, see staff papers in Joint Economic Committee, *Government Price Statistics* (87th Cong., 1st Sess.) Part 1, January 24, 1961, issued also by National Bureau of Economic Research as General Series No. 73. See also D. S. Brady, "Relative Prices in the Nineteenth Century," Conference on Research in Income and Wealth, National Bureau of Economic Research.

[4] See A. T. Court, "Hedonic Price Indexes with Automotive Examples," *The Dynamics of Automobile Demand*, New York: 1939; R. Stone, *Quantity and Price Indexes in National Accounts*, OEEC, 1956, Chapter 4; and Z. Griliches, "Hedonic Price Indexes for Automobiles: An Econometric Analysis of Quality Change" in *Government Price Statistics*, Joint Economic Committee (87th Cong., 1st Sess.), Part 1, Jan. 24, 1961.

by using the discounted prices at which the cars are actually sold (if available) or secondhand prices compiled from used-car dealers.

Barring serious errors, the hedonic price index can in practice be used to adjust for quality changes in a wide range of products and even services. Before we can have confidence in it, however, some check on its reliability is needed. The next subsection presents another method.

B. An Alternative Method

One widely accepted way to measure the quality difference between two varieties of a product, and the most direct approach, is to compare their open-market selling prices at the same point in time. If the prices quoted reflect the free play of supply and demand (and no distress selling), we are justified in viewing the price differential as the market's over-all estimate of the quality differences, including any difference due to marketing and advertising as part of the package.[5] Two special obstacles often stand in the way of such comparisons, however: (1) Prices of manufactured goods may be set by the producer (and so far as published price quotations go, often are), with the amount supplied adjusted to the amount demanded at the price set. Such prices do not always represent the market's estimate of quality. (2) The old variety of the product may be discontinued when the new variety is introduced, so that the two are not sold concurrently. A new product might be sold for less or more than its predecessor, depending among other things upon manufacturing and marketing costs and sales strategy. If the price of a new product undercuts its predecessor, does the decline reflect lower costs of production or cheapened quality? The answer is seldom obvious.

Secondhand prices offer a way out of this difficulty.[6] For all practical purposes, secondhand quantities are fixed, and selling prices in a broad market reflect the free play of demand and hence the public's estimate of relative qualities. Since manufacturers usually discontinue the old product when offering a new one, the two varieties differ not only in quality but also in age. If the depreciation rate of the product is known or can be estimated, quality differences can still be obtained. This is the method described here and applied to automobiles. The depreciation rate and the quality of new cars are estimated from their secondhand prices, which assumes of course that quality improvements endure to benefit subsequent owners and are reflected in secondhand prices.[7] (Estimating the de-

[5] At first, it might seem desirable to exclude differences in price due to marketing and advertising factors and to measure only changes in the inherent quality of products. But the distinction appears impossible to define unambiguously. Methods of estimating quality by physical characteristics seem to exclude marketing factors, but they do so only by disregarding buyers' preferences as reflected in market prices. Disregarding preferences can introduce serious errors.

[6] See M. J. Bailey, R. F. Muth, and H. O. Nourse, "A Regression Method for Real Estate Price Index Construction," *Journal of the American Statistical Association*, 58, December 1963, pp. 933-942; and M. L. Burstein, "The Measurement of Quality Changes in Consumer Durables," *Manchester School of Economics and Social Studies*, XXIX, September, 1961, pp. 267-279.

[7] The method implicitly assumes also that any quality improvement (or decline) depreciates in value at the same rate as the rest of the car, so that the value of the quality change remains proportional to the market price over the life of the car. (That would not be true, however, of longer warranties that expire after a certain mileage.) Alternative assumptions that might be made are more complicated and, at this stage, less appealing.

One might argue that secondhand prices merely reflect new prices, adjusted only for depreciation. That implies, however, that buy-

preciation rate presents certain problems which are discussed later.) The method is perfectly general and would apply to the introduction of new versions of any durable good, so long as the new and the old are sold secondhand with quoted prices for an extended period of time before being scrapped. Once we measure the quality difference, the prices of the product when new can be adjusted to give a "pure" price index over time.

It goes without saying that this approach measures, as seems appropriate, the market's estimate of quality, not solely that of engineers, product-testing laboratories, or self-styled social critics. More specifically, the "market" here pertains to buyers of the product secondhand, not the original purchasers. The two groups may appraise quality differently, but secondhand buyers are likely to be somewhat less influenced by ephemeral fads and to pay more attention to innovations of enduring importance. The method captures elusive changes in style and workmanship as well as obvious engineering improvements, and captures in addition all the minor but collectively important changes affecting quality, which a specified list cannot hope to cover in full. In short, any difference (real or fancied) in the characteristics of two secondhand cars (aside from age) that leads the average buyer to pay more for one is recorded as a difference in quality. This is far more inclusive than measures like the hedonic index can possibly be. Depending upon one's definition of "quality" and the purposes intended, this may or may not be more inclusive than is desired.

ers, contrary to all suppositions about rational consumer behavior, make no independent assessment of quality but simply accept the manufacturer's indication of quality as given by relative prices set on the products when new. In that event, assumed here to be rare, any kind of adjustment for quality is questionable and, indeed, may be unnecessary.

C. Quality and Changes in Tastes

The quality of a product can be viewed as reflecting a set of different characteristics. The public attaches different weights or prices to each of them, depending upon tastes and preferences that vary over time. Since the method here compares the secondhand prices of two successive model years at the *same point in time*, the same tastes determine the prices of both models at that time, and the estimate of quality change holds tastes constant. At another point in time the comparison may involve different tastes, so that the quality index derived does not hold tastes constant over time even though each year-to-year change in the index does.[8] The method therefore resembles a chain-link price index, in which the weights of components of the index are held constant from one period to the next but are allowed to change for successive links of the index.[9]

Even though the year-to-year comparisons hold tastes constant, changes in tastes can still affect the resulting index of quality. The public may attach a different weight to various characteristics at one time than at another. Or dramatic changes may occasionally occur with special consequences: When manufacturers produce new models catering to the new tastes, secondhand buyers who usually bought old models to save money may

[8] It should be added that, while the present method compares the prices at a point in time, the year-to-year changes in the index are averages of such comparisons in different years. Thus, year-to-year changes in the index actually hold average tastes for several years constant.

[9] In the hedonic index, weights for all specified components of quality may be obtained for every year. In one version of the index the same set of weights (obtained from a regression for one particular year) is used for all years. In another version (which seems more appropriate) a different set of weights is used for each year-to-year change, to produce a chain-link index. The latter is the kind reported later for automobiles in Table 4.

instead buy the newer ones to satisfy their new preferences. This shift in demand will depress the used prices of the older models and reduce our measure of their quality. In the same way, the newer models will show an equal increase in quality, apart from any other quality changes in the new models. The introduction of compacts in 1960, for example, satisfied a desire for smaller cars, which many buyers preferred (for a while, anyway). As a result, the full-size, six-cylinder 1960 models sold for less on used-car lots in subsequent years than the 1960 compacts did.[10] Such short-period fluctuations due to changes in tastes can affect the estimates, but they will tend to cancel out in the total change for a number of years combined, because the induced shifts in demand tend to be reversed in subsequent years and then produce the opposite effects. That will also be true of the effects on secondhand prices of large differences in the relative number of cars originally produced, and of temporary imperfections in the secondhand market. The figures for an extended period are therefore likely to be more reasonable than those for individual years.

Because appealing style changes will affect market estimates of quality, the present method might still include a spurious increase in quality for the following reason: If the public, because it liked variety, were always willing to pay a premium for the newest style, years with style changes would always register quality improvements, even though at the end of a period of years the latest style might be generally viewed as no better than a half-forgotten style of many years earlier. In that event, styles might go through long cycles, continually bringing a premium merely because they appeared new compared with the preceding few years. (The increases would not be absorbed by the depreciation rates, because those rates, as explained later, are estimates for years of slight model change which would receive no premium.) Premiums paid for variety cannot be attributed to quality improvements by any conventional meaning of the term, and ideally they should be excluded. Such premiums are probably small in the used-car market, however, and of minor importance. Buyers comparing 2-, 3-, and 4-year-old cars probably pay little extra for the newer styles which by then have largely lost their novelty.

D. Limitations of the Method

The use of secondhand prices, of course, imposes a severe practical limitation on this method. The estimates are always out of date, and so mainly help to reappraise historical price trends for clarification of current policy. In addition, such prices are readily available only for automobiles, though machine tools, commercial airplanes, real estate, and certain consumer appliances are also traded secondhand, and some data on prices are available. The method also tends, as noted, to be overly inclusive, and there are difficulties in estimating depreciation rates. Yet, despite its limitations, the method appears worth exploring to provide an independent check on the accuracy of the hedonic index, which has a potentially wider application. The hedonic index also has severe drawbacks. Comparison of the two is useful because their respective drawbacks are quite different.

[10] The hedonic index would, in principle, give the same result here if it were based on used-car prices and not list prices, which do not fully reflect shifts in demand. In the example cited, the hedonic regression would attach a negative weight for that year and those models to the size of cars. (For all cars, such a regression would probably still give a positive weight to size because of the heavy influence of very expensive cars. The result would still approximate the present method if both were based on the same set of cars.)

Section II describes the new method in detail, and section III presents some data. The method gives an average quality increase of 1.9 percent per year for automobiles from 1954-60, which is nearly half the 4.4 percent per year rise in list prices.

II. *Description of the Method*

A particular car line, such as a standard low-priced six-cylinder Chevrolet, generates over the years a matrix of prices; the price vectors represent each model year over its lifetime. Let P_t^i denote the secondhand price of a low-priced Chevrolet or Ford for model year i at time t. We can obtain from used car price lists the following open-ended matrix:

$$\begin{array}{ccccccc} & & & & \cdots & \cdots & \\ & & & P_{t+2}^{i+2} & P_{t+3}^{i+2} & P_{t+4}^{i+2} & \cdots \\ & & P_{t+1}^{i+1} & P_{t+2}^{i+1} & P_{t+3}^{i+1} & \cdots & \\ & P_t^i & P_{t+1}^i & P_{t+2}^i & \cdots & & \\ \cdots & \cdots & & & & & \end{array}$$

The element P_{t+2}^{i+1} might be (say) the the price of the 1956 model in 1958. The matrix starts from the bottom with any model year we choose—here year i—and with each year spreads upward and rightward, a particular row ending when that model is no longer actively traded on the used car market. Reliable quotations of secondhand prices do not become available until about a year after a model is first introduced. (Before that, the number of trade-ins is small.) Hence P_{t+k}^{i+k} is the first price on model i+k at time t+k, about a year after the model was first sold.

A. Quality Changes

For our purposes, the secondhand price can be viewed as composed of three elements: (1) a pure price index representing the general purchasing power of a dollar at time t and assumed applicable to all cars (and other products) sold at that time, p_t; (2) a quality index for cars, q_i, representing the merits of the ith year model relative to the first (base) year model being measured; and (3) a depreciation factor $d_{i,k}$, representing the value (excluding general price changes) of model i at any age k as a fraction of its value when first entered in the matrix. Hence, $1 - (d_{i,k})^{1/k}$ is the average annual rate of "pure" depreciation from the time of first quotation to age k. The price vector for two successive model years may thus be represented as follows:

$$\begin{array}{cccc} p_{t+1}q_{i+1} & p_{t+2}q_{i+1}d_{i+1,1} & p_{t+3}q_{i+1}d_{i+1,2} & \cdots \\ p_tq_i & p_{t+1}q_id_{i,1} & p_{t+2}q_id_{i,2} & \cdots \end{array}$$

Quality q is assumed to remain constant over the represented life of the model. In these terms, the price of a particular model changes from year to year because of general price changes and depreciation.

Unless all the d's are equal, which is unlikely, a count of known quantities and unknown variables indicates that the latter exceed the former, not allowing a determinant solution. An additional assumption must be introduced. One with considerable appeal is that the depreciated values for a particular car, while they no doubt have random variations, approximate a certain average rate of decline over a period of years. We might therefore specify that the expected value of $\log (d_{i,k})^{1/k}$ is the same for all model years. Hence:

$$\prod_{k=1}^{L} (d_{i,k})$$

(1) approximates D to the power

$$\sum_{1}^{L} k$$

for L not too small. If D is known, we can then solve for the price and quality factors, as follows. Ratios of the prices of two successive model years in each of L consecutive time periods,

$$\frac{p_{t+n}q_{i+1}d_{i+1,k-1}}{p_{t+n}q_id_{i,k}}, \quad k = n = 1, \ldots L,$$

have the geometric mean:

$$(2)\quad \frac{q_{i+1}}{q_i}\left(\frac{d_{i+1,1}\,d_{i+1,2}\ldots d_{i+1,L-1}}{d_{i,1}\,d_{i,2}\,d_{i,3}\ldots d_{i,L}}\right)^{1/L}$$

(By definition $d_{i,0}$ is unity for all i.) The factor in parentheses by assumption approximates

$$\left(\frac{D^{\sum_{1}^{L-1} k}}{D^{\sum_{1}^{L} k}}\right)^{1/L} = \frac{D^{(L-1)/2}}{D^{(L+1)/2}} = \frac{1}{D};$$

hence (2) approximates

$$(3)\quad \frac{q_{i+1}}{q_i\,D}.$$

With a value for D, we can solve for the quality change and, setting $q_0 = 1$, compute a quality index for the years following $t = 0$. (The derivation of D is discussed shortly.)

Note that the assumption that underlies this solution implies that the value of a model over time (apart from changes in the general price index p) approximates a declining exponential curve, $e^{-(1-D)t}$, with percentage deviations from the curve averaging zero. The assumption does not say that the decline in real value of a car from one year to the next, $d_{i,k+1}/d_{i,k}$, averages D. That statement would imply that the geometric mean of the yearly rates of decline in real value,

$$\left(d_{i,1}\frac{d_{i,2}}{d_{i,1}}\frac{d_{i,3}}{d_{i,2}}\cdots\frac{d_{i,L}}{d_{i,L-1}}\right)^{1/L} = (d_{i,L})^{1/L},$$

approximates D. In that event, the best estimate of quality change would be the single ratio:

$$\frac{p_{t+n}q_{i+1}d_{i+1,L-1}}{p_{t+n}q_i d_{i,L}}$$

for the largest L rather than the geometric mean as above. But the geometric mean will generally be far more reliable, because the prices of very old cars do not accurately reflect differences in quality over their full life.

B. Depreciation

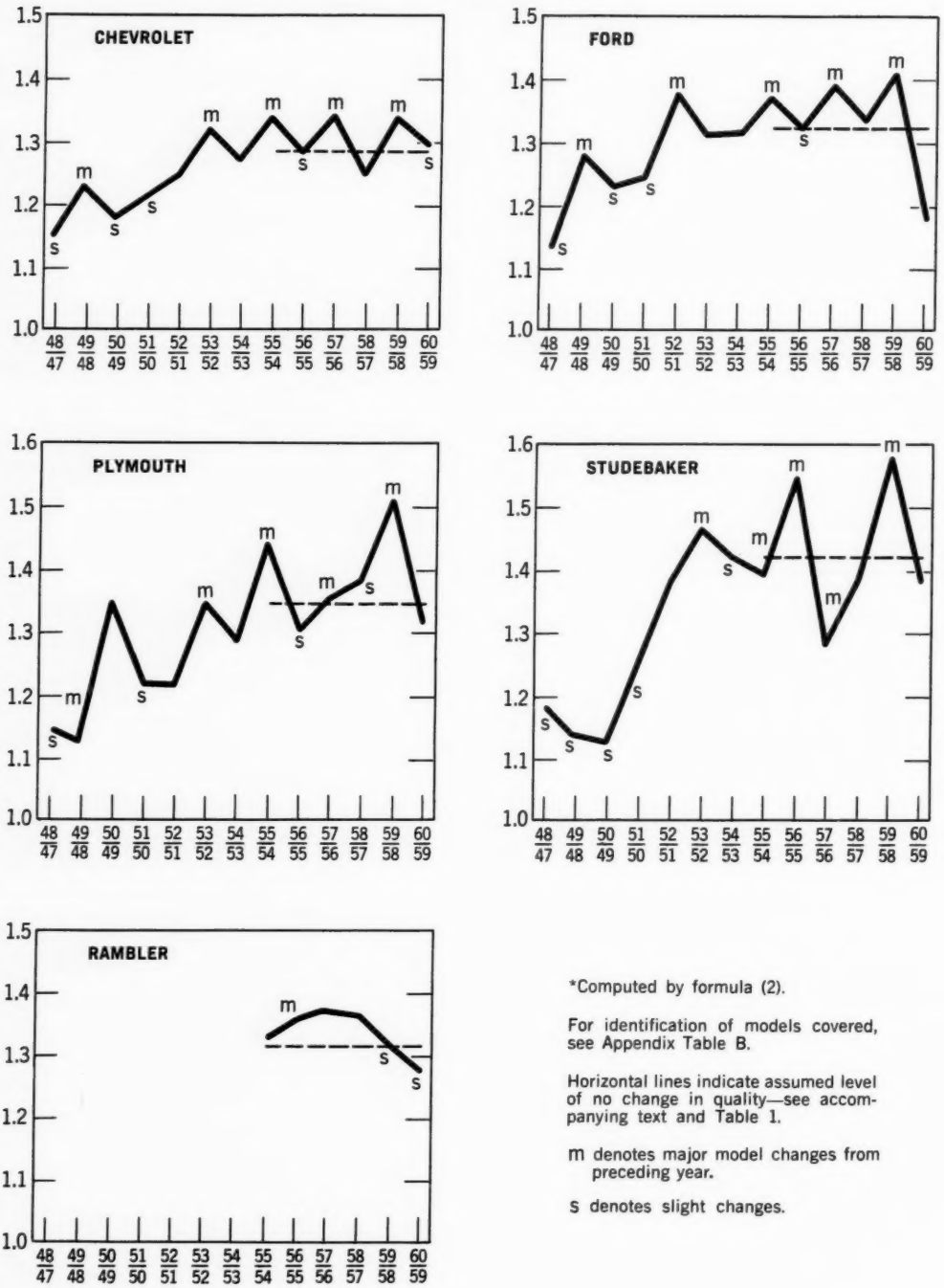
The method requires accurate estimates of D. It is perhaps not necessary to point out that the frequently used procedure of fitting a curve to prices of used cars of successive ages is unacceptable. Such curves, if based on a cross section of prices at a point in time, confound quality differences with depreciation, and if based on a time series of prices of the same model year over time, confound changes in the value of money with depreciation. In principle, one might estimate "pure" depreciation from survival rates of cars, derived from car population data, but extensive experimentation with that approach convinces me that it is much too imprecise.

The simplest practical estimate is provided by two successive model years in which the product line does not change (or only slightly), so that we may set $q_i = q_{i+1}$. Then D can be derived from (2) and used for all other model years. Although two successive model years of American cars are seldom identical (since minor changes are invariably made and, even if not, changing qualities of workmanship may enhance or lessen the likelihood of "bugs" in a car), many models are produced with little change for two years in a row. The calculations reported in the next section are based on the evaluation of the magazine *Consumer Reports* to determine whether, from the point of view more of intelligent consumers than of sophisticated engineers, two model years were essentially the same. If quality always improves ever so slightly even between years with no apparent differences, our quality index will have a small downward bias. The index can be viewed as giving a minimum estimate of quality improvements.

Chart

Mean Price Ratio of Current to Preceding Model Year, 1947-1960

Medium Line of Six-Cylinder Sedans*



*Computed by formula (2).

For identification of models covered, see Appendix Table B.

Horizontal lines indicate assumed level of no change in quality—see accompanying text and Table 1.

m denotes major model changes from preceding year.

s denotes slight changes.

III. *The Empirical Results*

Formula (2) was computed for the low- and middle-line of 4-door sedans of various makes for the period 1947-60. Prices were compiled from the *Official Used Car Guide* of the National Automobile Dealers Association for Middle Western states in February, May, August, and November, pertaining to prices of the preceding months, respectively. The geometric means of the price ratios cover 16 quarters, except for 1959-60, which covers only 15, and begin with August of the model year in the numerator. Sixteen quarters, or four years, was the longest period for which price quotations were available for all cars covered. Using a multiple of four quarters avoids any seasonal variation in the prices, though none was observed in the data. Means for 20 quarters were also computed for some cars. They gave similar results for the most part, though sizable differences occurred in some cases. Such differences, depending upon the length of period L used in the geometric mean, are a source of ambiguity in the method, which further refinement may help to lessen.

The chart graphs the geometric means of the price ratios for the middle-line, six-cylinder sedans. The low-line sixes and the eights (not shown) display similar patterns. The calculation of the means may be described as follows: For the 1956 Ford, for example, its secondhand price in August 1956 was taken as a ratio to the secondhand price in the same month of the 1955 Ford, and similar ratios were taken for the two cars in 15 subsequent quarters. The geometric mean of those ratios is the figure shown in the chart for Ford in 1956/1955. Corresponding calculations were made for other years and other makes. The mean ratios all exceed unity by the average amount of a year's depreciation in the older car, times any quality change. There is undoubtedly a certain amount of measurement error in these ratios which largely cancels out in average ratios for a group of cars.

A. Estimates of Depreciation

The ratios all rise substantially during the late 1940's and early 1950's. For many of those years in which the quality change was undoubtedly small, the rise in the ratio most likely reflects a rise in depreciation rates.[11] Apparently the absence of 1942-45 cars on secondhand lots created an unusually heavy demand for the relatively new used cars, holding up their prices. During those earlier years, the shortage may also have induced owners to maintain their cars in especially good condition, though most likely that was of secondary importance producing low depreciation rates. There was also some increase in average miles traveled per year for cars during the early 1950's, but not enough to explain the entire rise in the ratios.[12] For present purposes, it seems best to ignore the years up to 1954, by which time most effects of the early postwar car shortage should have passed.

While no substantial changes in depreciation rates appear to have occurred after 1954, it is not clear that the rates were precisely constant year after year.

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[11] The average age of cars of successive model years might not differ by exactly one year, which introduces a small error into the estimate of annual depreciation rates. No attempt was made to adjust for average ages.

[12] The average mileage traveled per year by passenger cars, (see Automobile Manufacturers Association, *Automobile Facts and Figures*, 1963, p. 46) fell 9 percent from 1946 to 1950, then rose 4 percent to 1952 and remained virtually unchanged thereafter until 1956, after which it rose slightly to 1960. If changes in depreciation rates because of varying degrees of car use from 1948 to 1952 or 1953 model years were proportional to changes in average mileage over the life of those cars, the implied effect on depreciation is slight: The decline in average mileage from 1946 to 1950 just about cancels the subsequent rise to 1952.

Even small changes could affect estimates of quality change. Unfortunately, we do not have many years in which model changes were slight in the period to reveal the trend of average depreciation rates. According to the evaluations of *Consumer Reports* (indicated in the chart), there are only two such years for Chevrolet after 1954 for which the mean price ratios have practically the same level, indicating no change in depreciation rates. For Plymouth, after 1954 there are also two such years, and they indicate a moderate rise in depreciation. For Ford after 1954 there is but one. Such meager evidence is inconclusive. Data for future years in which no model changes occur will help to clarify the time trend of depreciation.[13] In the meantime, we may select the years of least apparent change in quality to compute depreciation rates (by formula [3], as indicated above.) Those are the years that determined the level of the horizontal lines drawn on the chart, except for Plymouth, for which an average of 1955-56 and 1957-58 was used. For other years in the period 1954-60, points above the line imply quality improvements, below the line quality declines.

The depreciation rates implied by those lines are presented in Table 1. The rates vary among the cars, but cluster around 25 percent per year. The generally low rates for Chevrolet apparently reflect its strong sales organization and favorable trade-in market, and probably not a lower rate of physical depreciation. The estimates of its rates may appear too low here, but by other considerations they are not: Given the data, higher rates would imply smaller quality improvements in the other years, which already appear low for Chevrolet compared with Ford and Plymouth.

[13] A method (not used here) for estimating changes in depreciation rates is discussed in the appendix.

TABLE 1

Estimated Average Depreciation Rates* (1-D)
(Percent per year)

	Sixes		Eights		
	Low-Priced	Medium-Priced	Low-Priced	Medium-Priced	High-Priced
Chevrolet	25.2	22.0	22.7	21.0	
Ford	25.2	24.3	22.9	21.4	
Plymouth	27.6	25.4	26.4	23.5	
Rambler	25.8	24.8		24.6	
Ambassador				26.3	25.1
Studebaker	28.4	29.8		26.4	

* Reciprocal of geometric means subtracted from one (1-D calculated from formula (2) with L=16); 1955-56 for Chevrolet and Ford, average of 1955-56 and 1957-58 for Plymouth, 1958-59 for Rambler, 1956-57 for Ambassador, and 1953-54 for Studebaker.

B. Quality and "Pure" Price Changes

Multiplication of the price ratios by D for each car line, the complement of the depreciation rate, gives the estimated quality changes from year to year (see formula [3]). These changes from 1954-60 are shown in Table A in the Appendix for low- and medium-priced sixes and eights of Chevrolet, Ford, Plymouth, Rambler, and Studebaker, except where a model line could not be followed consistently, in which case substitutions or sometimes duplications were made, as indicated in Table B in the Appendix. For 1960, the "compacts" of the Big Three were linked to the corresponding sixes of 1959 and are shown separately.

The quality of an individual line may go up or down, not only because of engineering innovations or unplanned declines in workmanship, but also because of intentional upgrading or downgrading of the line accompanied by corresponding price changes. When various price lines are continually introduced and discontinued, it is not always clear how a particular line should be specified in certain years. In 1958, Chevrolet introduced a low-priced line called the Delray which was dropped the next year. The Delray had lower quality as well as lower price than the middle line (the Biscayne), also

introduced in 1958 and continued thereafter as the low line. The tables show quality changes for Chevrolet in 1958 both including and excluding the Delray. The two treatments give quite different quality changes for 1957-58 and 1958-59 individually, though naturally much less difference for the two years combined. Otherwise, all car lines were fairly easy to identify. Where there was doubt, lines were specified according to list price, the low line being lowest priced, and the middle line the next to lowest priced. Ambiguities of specification make less difference if we relate the quality change to the price change, also included in Table A. It would be desirable to use the average discounted price at which cars were sold, but in the absence of such data we may use the advertised price of 4-door sedans including Federal taxes and handling charges, but excluding all optional equipment, freight, and state or local taxes. If the degree of discounting does not vary greatly from year to year, the list prices give percentage changes with reasonable accuracy.

In addition to a comparison with prices, the quality changes of the different lines need to be weighted by the share of each in total sales. Weighted averages of the lines for each make are also shown in Table A. The data used for sales were not as detailed as might be desired. It was necessary to take an unweighted average of the low- and medium-priced lines in the two cylinder groups; that assumes the two lines have roughly equal sales, which is inaccurate for many years. The data do allow a weighted average of the six- and eight-cylinder groups for each car, and for 1959-60 allow us to give the compacts a separate weight.[14] In a more detailed study, weighted averages should be computed for each make and line of car, including particularly the high-priced lines not included here at all that account for a substantial part of total sales. In the absence of that detail, the weighted averages in Table A for each make have been combined into an industry average, weighted by the relative number of total cars sold by each company. These summary figures are shown in Table 2, and the weighted averages of price changes divided by quality changes—the "pure" price index—are shown in Table 3.

TABLE 2

Average Quality and Price Changes* (Percent)

Model Years	Quality	List Price	Price/Quality
1954-1955	5.2	2.5	— 2.5
1955-1956	— 0.2	6.0	6.3
1956-1957	4.2	10.5	6.1
1957-1958	0.1	5.3	5.3
1958-1959	5.7	5.9	0.4
1959-1960	— 3.3	— 3.1	0.4
1954-1960	11.9	29.7	16.7
Per Year	1.9	4.4	2.6

* An average of figures in the last column of Table A, weighted by the share of each manufacturer in total sales. The third column plus 100 may not equal the second column plus 100 divided by the first column plus 100 because of rounding.

C. Summary of Results

In terms of the combined figures for all cars during the period 1954-60, shown in Table 2, quality declined in two years, was virtually constant in one, and rose by 4 to 5 percent in three. The increases coincide with the years of substantial model changes (see the chart), except for 1959-60 when quality declines accompanied the introduction of compacts, mentioned earlier. The net result for the period was an increase of almost 12 percent or nearly 2 percent per year, that is, roughly two-fifths the corresponding

[14] The sales data give total registrations of each make in a calendar year, without regard to the model year, and so are not entirely appropriate for use here. Insofar as new models are introduced before the first of the year, the data mix together the sales of part of two successive yearly models. (Sales data are from *Automotive News*, annual *Almanac* edition.)

TABLE 3

**List Price Changes Per Unit of Quality*
(Percent)**

Model Years	Chevrolet	Ford	Plymouth	Rambler	Studebaker	All Cars, Weighted Average
1954-1955	— 1.6	— 1.9	— 6.2	0.6	— 5.7	— 2.5
1955-1956	5.7	6.4	9.3	4.8	— 3.7	6.3
1956-1957	7.2	1.9	9.9	6.4	12.4	6.1
1957-1958	8.6 (7.7)†	1.6	2.7	— 0.8	10.7	5.3 (4.8)†
1958-1959	4.4 (5.9)†	— 2.1	— 6.7	2.5	—14.2	0.4 (1.1)†
1959-1960	— 1.1	3.5	— 3.7	5.8	2.6	0.4
1954-1960	25.0	9.5	4.0	20.7	— 0.5	16.7
Per Year	3.8	1.7	0.9	3.2	— 0.1	2.6

* Price changes divided by quality changes, weighted as in Tables A and 2.
† Biscayne is used instead of Delray in 1958 for the low-priced line, and Bel Air is used instead of Biscayne for the medium-priced line. The figures in parentheses were not used for the 1954-60 total as shown, though their inclusion gives practically the same total figure.

change in list prices, so that prices adjusted for quality rose 17 percent over all or 2.6 percent per year, less than three-fifths of the unadjusted price increase. In timing as well as magnitude, the figures seem plausible, though the total increase in quality is lower than the hedonic index shows (see below). Whether this half decade was typical of earlier or later years is difficult to say. It included extensive design changes; engineering improvements were continual and collectively substantial, though not radical.

IV. *Reliability of the Estimates and Possible Improvements*

While the over-all estimates appear credible and the method avoids many of the arbitrary assumptions inherent in other measures of quality change, there is reason for viewing the results as exploratory and tentative. Two extensions of the data are available but were not used here in order to keep down the compiling job: (1) Including quality estimates for every line of automobiles in the average and weighting them according to sales would give more reliable results; the coverage here accounts for only about half of total sales. Monthly rather than quarterly prices would also improve accuracy, though probably not by much. (2) Monthly sales data, on the other hand, would allow a needed adjustment, not made here, for deviations from one year in the average age of cars of successive model years. Since production scheduling differs from year to year, the average difference in age of successive models may be a few months more or less than one year, requiring an adjustment in the estimated annual depreciation rate. The absence of such adjustments could produce errors of one, or at most two, percentage points in the quality estimates, however, and the error is not cumulative but tends to cancel out over a period of years.

The most serious source of error is undoubtedly in the estimates of depreciation, even apart from changes in average age. To estimate depreciation, some model year has to be assumed in each car line not to differ in quality from the previous year. The method offers no way

to avoid error if that assumption is not entirely correct. A slight error here cumulates over model years, since it makes the estimate of quality change too high or too low in every year. We need two successive years in which the models are identical. Model changes were slight for the years noted in the chart and used here to estimate depreciation, but some change did occur, introducing an unknown error. If no change occurs, choices between the two models by used-car buyers would focus mainly on workmanship. Although they might find it has sometimes improved and sometimes deteriorated, the finding would normally vary among car lines, thus canceling out in the over-all figures. Coverage of a longer period will provide a better selection of years to satisfy this requirement.

In addition to errors in estimating the depreciation rate, there is also a problem of drift in the rate. Models of the same line produced in different years may not depreciate at the same rate. Such drift may partly account for the wide variation in price changes adjusted for quality, summarized for the full period in Table 3. Most of those differences are due to the quality estimates; list prices usually moved quite closely, at least for the Big Three. Two possible techniques for handling depreciation drift have been mentioned. One, discussed in the Appendix, is to estimate changes in depreciation rates from changes in the price ratios over time. That technique has certain difficulties, however, and requires further refinement before it can be used. Another technique is to interpolate depreciation rates, which requires a longer period than was used here to provide several benchmark rates based on years in which model changes were slight. How much difference such corrections would make in the over-all figures is unclear, and until improved the present results should be viewed as highly tentative.

V. *Comparison with Hedonic Index and Consumer Price Index*

A. Hedonic Index

As stated at the outset, one purpose of developing new estimates of quality change is to evaluate the hedonic index, which in practice can be applied to a wide range of products and services, but which has a questionable reliability. The new method is not necessarily more accurate; it has certain deficiencies of unknown importance and needs refinement. Nevertheless, the two methods are independent and have quite different deficiencies; each can be assessed by the other.

The hedonic index has been applied to automobiles by Griliches, as noted.[15] He regressed a cross section of list prices on various pre-selected specifications of automobiles in successive years. With the regression coefficients as moving weights, he calculated the quality change from year to year based on the specifications in one of each pair of years for three lines of Chevrolet, three of Ford, and two of Plymouth. His estimates of quality changes for 1954-1960, shown in Table 4, are based on six-cylinder models to 1956 and V-8's thereafter. Table 4 also shows a comparable weighted average derived from the figures in Table A in the Appendix. Table A covers only two lines of Chevrolet and Ford, so each of these four lines was weighted by 3/16, and each of two lines of Plymouth by 1/8, to be comparable with Griliches' figures. The two indexes are still not entirely comparable for the more important rea-

[15] See Z. Griliches, "Hedonic Price Indexes for Automobiles: An Econometric Analysis of Quality Change" in *Government Price Statistics*, Joint Economic Committee (87th Cong., 1st Sess.), Part 1, Jan. 24, 1961; and "Notes on the Measurement of Price and Quality Changes," Conference on Research in Income and Wealth, *Models of Income Determination*, National Bureau of Economic Research, 1964, pp. 381-404.

sons that Griliches used list, rather than secondhand, prices and his regression weights were derived from a larger cross section of cars than the ones to which the weights are applied here. Nevertheless, until more comparable indexes are available, these can serve for judging the degree of similarity.

TABLE 4

Estimates of Quality Change in Chevrolet, Ford, and Plymouth* (Percent)

Model Years	Hedonic Index† (Griliches)	Present Estimates Based on Secondhand Prices‡
1954-1955	5.7	5.2
1955-1956	2.9	— 0.7
1956-1957	4.8	4.4
1957-1958	3.4	3.8
1958-1959	1.4	4.9
1959-1960	0.3	— 3.2
1954-1960	19.9	15.0

* Sixes to 1956 and eights thereafter.

† From "Notes on the Measurement of Price and Quality Changes," op. cit., Table 7, p. 396.

‡ For two lines of sixes or eights from Table A; each line is weighted 3/16 for Chevrolet and Ford and 1/8 for Plymouth.

There is considerable similarity between the two indexes despite their different derivations and lack of common coverage. Although some of the years show divergent movements, the increases for the full period have the same order of magnitude. If a longer period did not produce any larger difference, the percentage difference would decline, and the two would give for an extended period a range for the total quality change in which we could place some confidence. The results justify further research on both methods.

B. Consumer Price Index

Aside from throwing light on the much-disputed quality of new cars, the main purpose of this study is to clarify the accuracy of our price indexes and suggest a way of improving them. It is widely contended that a major reason why the Consumer Price Index has continued to rise 1 to 2 percent a year, even when inflationary pressures seem absent, is that it fails to adjust for quality improvements. To judge the validity of that criticism, reliable estimates of quality change are essential.

Table 5 compares the automobile component of the Consumer Price Index with corresponding list prices and the "pure" price index of Table 2. The CPI covers only sedans of the Big Three and only V-8's since 1956.[16] The table sug-

TABLE 5

Price Changes of New Cars (Percent)

Model Years	Consumer Price Index*	List Prices†	List Price Adjusted for Quality‡
1954-1955	— 3.5	2.0	— 2.5
1955-1956	2.8	6.3	6.3
1956-1957	5.3	10.3	6.1
1957-1958	3.2	5.6	5.3
1958-1959	4.3	6.0	0.4
1959-1960	— 1.4	— 0.6	0.4
1954-1960	10.8	33.1	16.7

List Prices of Big Three§ Sixes 1954-1960 and Eights 1955-1960

	Chevrolet		Ford		Plymouth	
	Sixes	Eights	Sixes	Eights	Sixes	Eights
Low line	37.9	32.6	34.3	34.6	32.4	30.7
Middle line	37.7	32.7	28.9	29.6	31.6	30.7

* New cars, Monthly Labor Review and Bureau of Labor Statistics, Bulletin No. 1256.

† Two lines each for Chevrolet, Ford, and Plymouth, unweighted average; sixes to 1956, eights thereafter. Compacts are excluded for 1960 to be comparable with CPI (see footnote 16).

‡ From Table 2 for all cars, weighted.

§ From Table A, excluding compacts.

[16] Compacts were linked into the index in 1960, but in such a way as not to affect the change from 1959 to 1960. See O. A. Larsgaard and L. J. Mack, "Compact Cars in the Consumer Price Index," *Monthly Labor Review*, May, 1961, pp. 519-523.

gests that the CPI is not biased upward and may even overcorrect for quality improvements in automobiles. How that happened is not clear. The comparatively small rise in the CPI does not reflect any quirk of weighting. The price increases over the period in individual lines of the Big Three, shown in the bottom half of the table, are all around 30 percent, which is three times the rise in the CPI. Those list prices exclude major changes due to optional equipment like automatic transmissions, which are excluded from the CPI. The CPI has apparently also been corrected for some quality changes, though in a manner that published sources do not explain in detail. One discussion states:

> Where the quality change involves the the addition or deletion of features which have an established retail price, prices are adjusted to eliminate their influence. [However,] only recently has it been possible to adjust automobile prices for some of these changes in automobile construction [and longer warranties, using cost information from the manufacturers].[17]

That implies some quality adjustment, though presumably not much. While the CPI also solicits actual prices charged, it is hard to believe that discounting rose enough to offset a large part of the overall increase in list prices, though whatever discounting did occur should also be incorporated into the quality-adjusted index. Only if the average discount had risen 6 percent or more from 1954-1960 would the present index after adjustment for discounting show a smaller rise than the CPI does.

This surprising result makes the need for reliable estimates of quality change all the more imperative. It has commonly been thought that price indexes are biased upward, with only the amount in doubt. The comparison here throws even the direction of bias into question. To be sure, it seems unlikely that the CPI similarly overcorrects for quality changes in other durable goods; yet any correction based on costs rather than open market prices will contain errors of uncertain size. The purpose of this study is not to criticize the capability or integrity of the CPI compilers, who face a very difficult task, but to suggest the importance and feasibility of expanding and improving our estimates of quality change.

[17] See O. A. Larsgaard, and L. J. Mack, "Compact Cars in the Consumer Price Index," *Monthly Labor Review*, May 1961, pp. 522-23. The statement in brackets paraphrases the article.

Appendix

A Proposal for Estimating Depreciation Drift

Depreciation drift is the tendency for the average rate of depreciation of successive model years to change slightly. Rates drifted upwards during the postwar years until about 1953 or 1954, and the data also suggest that the rates were not completely constant thereafter. The present method of estimating quality change requires an accurate estimate of average depreciation rates, making it desirable to be able to take account of any drift. The method below provides a theoretical framework for studying depreciation drift, but must overcome certain practical difficulties (as explained) before it can be successful.

In recognition of differences in depreciation rates between model years, we need to place a factor $R_1^{A(i)+k}$ in front of every $d_{i,k}$ of formula (2). The power of R_1, $A(i)+k$, is the age of the ith model in the kth year; A(i) is a fraction of a year accounting for differences in the time of year when the average car of each model year was produced and sold. For simplicity in what follows, however, let us assume that the A(i) are equal for all i. Then they can be omitted. The matrix of prices is then represented as follows:

$$\begin{array}{l} p_{t+1}q_{i+1}R_{i+1} \\ p_{t+2}q_{i+1}R_{i+1}^2d_{i+1,1} \\ p_{t+3}q_{i+1}R_{i+1}^3d_{i+1,2} \quad \ldots \\ p_iq_iR_i \\ p_{t+1}q_iR_i^2d_{i,1} \\ p_{t+2}q_iR_i^3d_{i,2} \quad \ldots \end{array}$$

The conversion factor R affects differently the slope and the initial level of the declining curve of prices for each model year as it ages. Hence, it is possible to estimate differences in average depreciation by the slope of the price ratio curve and quality changes by its initial level.

This can be done by regressing on k the logarithm of the price ratios for model years i and i+1:

$$(A1)\quad \frac{p_{t+n}q_{i+1}R_{i+1}^k d_{i+1,k-1}}{p_{t+n}q_iR_i^{k+1}d_{i,k}},\ k = 1, \ldots L.$$

In the resulting regression function

$$(A2)\quad \log_e \frac{q_{i+1}R_{i+1}^k d_{i+1,k-1}}{q_iR_i^{k+1}d_{i,k}} = a + bk,$$

the slope estimates the difference in depreciation, and the intercept estimates the logarithm of formula (2). To prove this, first note that, by assumption (1),

$$(A3)\quad \frac{d_{i+1,k-1}}{d_{i,k}} \text{ approximates } \frac{1}{D},$$

since the two depreciation factors do not differ in level (by assumption that difference is absorbed by the conversion factors R) but only by random variations which cancel out in fitting the regression equation. Hence we may treat the approximation (A3) as an equality. Make that substitution of D and differentiate equation (A2) with respect to k:

TABLE A

Quality and Price Changes of 4-Door Sedans, 1954-1960 (Percent)

Model Years	Sixes				Eights				Average*	
	Low-Priced		Medium-Priced		Low-Priced		Medium-Priced			
	Qual.	List Price	Qual.	List Price	Qual.	List Price	Qual.	List Price	Qual.	List Price
CHEVROLET†										
1954-1955	4.6	2.9	4.4	2.7					4.5	2.8
1955-1956	**0**	6.2	**0**	5.6	**0**	5.9	**0**	5.3	**0**	5.7
1956-1957	3.4	11.6	4.6	13.2	5.5	11.1	4.1	12.6	4.5	12.0
1957-1958	—3.6	5.2	—3.2	5.3	—2.9	5.3	—2.9	5.4	—3.1	5.3
	(3.7)	(11.8)	(3.7)	(12.2)	(4.2)	(11.6)	(3.8)	(12.0)	(3.9)	(11.9)
1958-1959	—0.7	6.8	4.2	6.6	1.2	6.9	4.5	6.7	2.3	6.8
	(—7.7)	(0.5)	(—4.1)	(0.0)	(—5.6)	(0.9)	(—3.4)	(0.4)	(5.1)	(0.5)
1959-1960	—1.5	0.7	1.2	—0.1	1.3	0.2	2.1	—0.5	—0.6	—1.7
Corvair										
1959-1960	—10.3	—11.4	—10.1	—13.8						
FORD										
1954-1955	5.9	3.1	3.6	2.9	7.3	4.3	5.1	4.0	6.0	4.0
1955-1956	**0**	6.5	**0**	6.9	**0**	6.2	**0**	6.5	**0**	6.4
1956-1957	8.4	9.4	5.2	9.4	8.2	8.9	5.6	8.9	6.9	9.0
1957-1958	4.9	3.3	1.0	5.9	6.2	5.3	2.8	6.7	4.1	5.6
1958-1959	6.1	7.8	6.7	5.5	7.7	6.0	9.6	5.0	8.1	5.8
1959-1960	—12.0	0.5	—11.9	—4.1	—9.2	0.0	—8.1	—4.2	—8.7	—5.6
Falcon										
1959-1960	—6.9	—13.2								
PLYMOUTH										
1954-1955	6.3	0.6	7.6	0.1					7.0	0.4
1955-1956	—2.7	6.4	—3.0	6.0	—4.4	6.0	—1.8	5.7	—3.0	6.0
1956-1957	1.6	10.0	0.9	11.5	—2.0	9.3	2.0	10.8	0.3	10.2
1957-1958	2.9	5.5	2.9	5.1	3.1	5.7	1.9	5.2	2.6	5.4
1958-1959	12.7	5.3	12.8	5.9	12.3	5.5	14.7	6.1	13.3	5.7
1959-1960	—3.7	1.2	—2.1	0.0	—3.9	1.1	—1.2	0.0	—0.8	—4.6
Valiant										
1959-1960	2.0	—10.1	1.4	—12.7						
RAMBLER										
1954-1955			—0.4	0.2					—0.4	0.2
1955-1956	1.2	5.9	2.1	6.0					1.2	6.1
1956-1957	3.9	9.2	2.7	11.4					3.2	9.7
1957-1958	3.6	4.4	2.1	4.2			2.7	4.0	3.7	3.3
1958-1959	**0**	2.5	**0**	2.5			**0**	2.4	—0.1	2.3
1959-1960	—5.8	0.0	—4.7	0.0			—6.3	—0.5	—5.3	0.1
Rambler Ambassador‡										
1955-1956					—2.5	6.5	—3.2	7.8		
1956-1957					**0**	—4.6	**0**	—5.8		
1957-1958					—14.7	—8.3	14.5	—9.3		
1958-1959					—2.3	0.0	—1.9	0.0		
1959-1960					—7.2	0.0	—6.6	0.0		

TABLE A (Continued)

Model Years	Sixes				Eights				Average*	
	Low-Priced		Medium-Priced		Low-Priced		Medium-Priced			
	Qual.	List Price	Qual.	List Price	Qual.	List Price	Qual.	List Price	Qual.	List Price
STUDEBAKER										
1954-1955	1.6	—1.0	—2.4	—1.7			1.7	—7.6	0.8	—5.0
1955-1956	16.8	11.8	8.7	5.7			9.7	5.3	11.1	6.9
1956-1957	—14.2	—6.0	—10.0	2.8			—9.7	2.5	—11.3	—0.2
1957-1958	—8.8	0.0	—2.7	10.0			1.8	9.4	—4.2	6.0
1958-1959	25.4	6.5	11.0	—3.5			12.9	—2.9	16.5	0.1
1959-1960	—0.6	2.6	—2.7	1.0			0.6	0.9	—0.8	1.6

Method of computation: By formula (2) for 16 quarters (only 15 for 1959-60). Basic data are displayed in the chart, depreciation rates in Table 1. Boldface zeros indicate years of assumed no-change in quality. Big Three compacts for 1950 were linked to corresponding full-size sixes of 1959.

* Low- and medium-priced lines of each cylinder group were averaged with equal weight, and the averages for these two groups were then averaged with weights given by sales of sixes and eights of that make in each calendar year (from **Automotive News Almanac**). Big Three compacts were treated as a separate cylinder group and included in averages for 1959-60, weighted by their sales in 1960. Rambler average includes Ambassador.

† See Table B for identification of figures in parentheses.

‡ Medium-priced and high-priced lines, respectively.

$$(A4) \quad \log_e \frac{R_{i+1}}{R_i} = b, \text{ for } i \text{ and } i+1.$$

The estimate of a is found by averaging the regression line over k. If we make the substitution for b of (A4), we have:

$$(A5) \qquad \log_e \frac{q_{i+1}}{q_i R_i D} = a.$$

For two successive years in which quality is assumed constant, we may estimate R_iD. Then R_iD for all i can be found from successive estimates of b for other pairs of years and thence the quality changes from successive estimates of a.

This method was tried on the data, but it was unsuccessful and was put aside. The price ratios (A1) for many model years display fluctuations that throw off the estimates of slope (A4) and produce patently inaccurate results. Experiments with various smoothing devices did not succeed. The price ratios are apparently affected at certain times by special developments. It might be possible to adjust for them in various ways, but this requires a careful study of the car market and has not been done.

It should be noted that depreciation rates affect quality. The estimate of quality change of the car when new,

$$\frac{q_{i+1}}{q_i},$$

should be multiplied by the present discounted value of the series:

$$\frac{R_{i+1}^k}{R_i^k}, \; k = 0, 1, \ldots .$$

A model will decline in value at a different rate than its predecessor if these ratios are not all unity. Depreciation, after all, affects the value of a car over time, and the present value of any difference in depreciation rates affects the "true" worth of the car to the first purchaser, assuming the difference represents durability and not upkeep. This is in addition to differences in relative purchase prices. We can, in principle, make this adjustment in our quality index. Although a higher or lower depreciation rate shows up in the future and will not ordinarily be recognized at the time of purchase, such drift in rates represents differences in quality that should be counted.

TABLE B

Model Lines Used in Computing Price Ratios

Model Years	Sixes		Eights		
	Low-Priced	Medium-Priced	Low-Priced	Medium-Priced	High-Priced
CHEVROLET					
1947-1948	Stylemaster	Fleetmaster			
1949-1952	Styline Special	Styleline Deluxe			
1953-1954	"150"	"210"			
1955-1957	"150"	"210"	"150"	"210"	
1958*	Delray (Biscayne)	Biscayne (Bel Air)	Delray (Biscayne)	Biscayne (Bel Air)	
1959-1961	Biscayne	Bel Air	Biscayne	Bel Air	
Corvair					
1960	Standard	Deluxe			
1961	"500"	"700"			
FORD					
1947-1948	Deluxe	Super Deluxe	Deluxe	Super Deluxe	
1949	Deluxe	Custom	Deluxe	Custom	
1950-1951	Deluxe	Custom Deluxe	Deluxe	Custom Deluxe	
1952-1956	Mainline	Customline	Mainline	Customline	
1957	Custom	Custom 300	Custom	Custom 300	
1958-1960	Custom 300	Fairlane	Custom 300	Fairlane	
1961	Fairlane	Fairlane 500	Fairlane	Fairlane 500	
Falcon					
1960-1961	Falcon 6				
PLYMOUTH					
1947-1950	Deluxe	Special Deluxe			
1951-1953	Cambridge	Cranbrook			
1954	Plaza	Savoy			
1955-1958	Plaza	Savoy	Plaza	Savoy	
1959-1961	Savoy	Belvedere	Savoy	Belvedere	
Valiant					
1960-1961	V-100	V-200			
RAMBLER					
1954		Super			
1955-1956	Deluxe	Super			
1957	Deluxe	Super		Super	
1958-1960	Deluxe	Super		Rebel Super	
1961	Classic Deluxe	Classic Super		Classic Super	
Rambler Ambassador					
1955-1961				Super	Custom

TABLE B (Continued)

Model Years	Sixes		Eights		
	Low-Priced	Medium-Priced	Low-Priced	Medium-Priced	High-Priced
STUDEBAKER					
1947-1949	Champion Deluxe	Champion Regal Deluxe			
1950	Champion Custom	Champion Deluxe			
1951-1952	Champion Custom	Champion Deluxe		Commander Regal	
1953-1955	Champion Custom	Champion Deluxe		Commander Deluxe	
1956†	(Champion)	Champion		Commander	
1957	Scotsman	Champion Custom		Commander Custom	
1958	Scotsman	Champion		Commander	
1959-1961	Lark Deluxe	Lark Regal		Lark Regal	

° In 1958 Delray was the lowest priced Chevrolet, followed by Biscayne and then Bel Air; in 1959 Delray was discontinued.
† Since there was only one line of Studebaker six in 1956, the Champion was used for both lines.

► HASKEL BENISHAY

Measurement of Market Yields on Equity Capital

I. *Introduction*

A definition of the market yield on equity, capable of empirical measurement, is pertinent to a wide variety of investment problems. Such a definition, and an evaluation of problems associated with its empirical representation, are the subject matter of this paper.[1] The paper compares errors associated with (1) book earnings and (2) dividend-plus-the-change-in-market-value of company equity—two empirical measurements of the expected income of company equity—and determines which of the two is more appropriate for the empirical representation of the market yield on equity. Their respective divergences from the "true" value of expected income are evaluated and compared for the cases of invariance and change in expected income. Each case is in turn evaluated with and without the introduction of accounting error. The conclusion reached is that book earnings are generally a more reliable measure.

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[1] For a discussion of an empirical representation of the market rate of return on equity see, Ezra Solomon, "A Company's Cost of Capital," *Journal of Business*, October, 1955.

II. *The Alternative Measures of Equity Returns*

If it were possible to specify exactly the income of a share of stock for all future years, the market yield on equity

could be derived in essentially the same manner in which the market yield is derived for bonds and promissory notes. The exactly specified equity incomes for every future year, in conjunction with the market value of an equity, would produce a straightforward definition of the yield on equity similar to the definition of a bond yield. A specification mechanism that applies to bonds and promissory notes, however, cannot be usefully employed for measuring stock incomes. The future returns on a share of stock are not concrete promises to pay that provide an upper limit as they do in the case of bonds, but rather are an estimated set of possible incomes best described by a statistical distribution. The future income receipts of a stock, as perceived at time t, may be viewed as an infinite sequence of random draws from an infinite population of yearly net incomes, with expectation E_t. The market may be regarded as discounting E_t, the income stream of equal yearly quantities, at a rate of interest that is a function of this distribution's variance and whatever other factors affect the equity discount rate, to produce Q_t, the market value of the equity at t. This view suggests expected-income-over-equity, E_t/Q_t, as a simple theoretical definition of the market rate of return on equity amenable to empirical measurement. The equity market value, Q_t, is directly and unequivocally measurable by equity market price quotations. The measurement of expected income, E_t, however, is less unequivocal. Two empirical possibilities are considered for the representation of E_t.

1. Book earnings or dividends plus retained earnings.
2. Dividends plus the change in the market value of the equity.[2]

[2] Whichever empirical "expected income" variable is adjudged appropriate, some type of weighted average of past yearly quantities of that measure, approximating investors' formulations of future expected income, should be employed.

A. Book Earnings

The limitation of book earnings as a measure of expected income for the purpose of computing a market yield on equity lies in the presumed accounting "flexibility" of determining book income. Accounting practices vary and book earnings are a function of these variable practices. Consequently, book earnings contain an accounting error of an unknown magnitude.

On the other hand, book earnings seem to be the major figures investors and brokers consider as a measure of expected income. In published evaluations of stocks, price-book earnings ratios appear to be the preferred criteria. Price-earnings ratios are usually thought of in the market as the price per permanent dollar of earnings, the "commodity" that appears to be bought when a share of stock is acquired. Investors and brokers usually approximate the earning capacity of the firm by book earnings, along with such additional information as knowledge of pending contracts or taxation suits.

B. Dividends Plus Equity Change

The measurement of expected income by dividends plus the change in the equity appears to have merit, at least superficially, on two main grounds: "realism" and "accuracy."

1. People really treat dividends as well as the change in their equity (capital gains) as income. Dividends are actually distributed in the form of checks. Capital gains are, or can be, actually realized through the sale of the stock.

Other measures of expected income have been suggested. M. J. Gordon and E. Shapiro employ dividends, plus a factor representing the growth in dividends, to represent expected income. Since their dividends' growth is represented by retained earnings, their measure of expected income is not essentially different from book earnings. See, M. J. Gordon and E. Shapiro, "Capital Equipment Analysis: The Required Rate of Profit," *Management Science*, III, 1956.

2. This measure is independent of variable and nonuniform accounting practices. Dividends paid by checks are known exactly. Change in the equity value can be determined exactly from stock market quotations.

But does the investor's income measure, dividends plus change in the value of the equity $(D + Q')$, appropriately represent expected income, E_t, the theoretical concept under consideration? Is it not likely to fail in the estimation of expected income? Is not a change in equity value, larger than the change in expected income, associated with it? Embodied in the changes in equity is the capitalized value of the change in expected income, not the change in expected income itself. But expected income, not its capitalized value, is the quantity of interest.

The preceding discussion suggests that both measures of expected income contain an error. To determine which may be the more reliable of the two is the task of the remaining sections of this paper. Four basic cases are considered. In case 1A we assume that no accounting error exists and no shift occurs in expected income during the period under consideration. In case 2A there is no accounting error, but a shift occurs in expected income. Case 1B is characterized by no shift in expected income and the existence of an accounting error. Case 2B is one with both an expected income shift and an accounting error. Our conclusion is that book earnings will tend to be more reliable than dividends plus equity change.

III. *Comparison of the Income Concepts with No Accounting Error*

In this section the two alternative measures of expected income are compared with expected income under assumptions of invariance and change-in-expected income. Expected income serves as a benchmark and a point of reference. The criteria of performance are straightforward: The further a measure is from expected income the less adequate it is. The comparison is made within the framework of a model whose notation and assumptions are presented below and used throughout the paper.

Let a subscript t represent a point in time (referring to stocks) and a time interval $t - 1$ to t (referring to flows), and let expected income be defined as a stock.

Let expected income at time t be E_t, and let it be known with certainty. Let dividends at time t be D_t. Let equity at time t be Q_t. Let equity reflect a change in expected income in the same period in which the change in expected income occurs. Let the change in equity $(Q_t - Q_{t-1})$ be Q_t'. Let the retained earnings at t be R_t. Let the discount rate i_t be (E_t/Q_t). As no change in risk levels is considered, assume that $i_t = i_{t-1}$. To provide a benchmark, let expected income at $t - 1$ equal book earnings at t not distorted by accounting. This initial equality furnishes a reference point to which situations with and without shifts in expected income could be compared. Assume for the moment that the book earnings measure is not distorted by accounting error and that it represents true past income.

A. Case 1A: No Shift and No Accounting Error

Assume invariance of conditions for the firm between $t-1$ and t, as expressed by the equality of the rate of return on retained earnings and the discount rate i. As a result, retained earnings of t, R_t, are reflected in the equity change in t, Q_t', and one can express expected income at t, E_{t-1}, in two alternative ways, as follows:

$$E_{t-1} = D_t + Q_t' \qquad (1a)$$

$$E_{t-1} = D_t + R_t \qquad (1b)$$

Advancing one interval in time, E_t may be expressed as:

$$E_t = D_t + Q_t' + iQ_t' \qquad (2a)$$

$$E_t = D_t + R_t + iR_t, \qquad (2b)$$

where either iQ′ or iR is a representation of the part added in t to the income stream because of retained earnings investment. It appears clear that under assumptions of case 1A, Q_t' and R_t are equal and, therefore, interchangeable for the purpose of measuring expected income, E.

B. Case 2A: Expected Income Shift and No Accounting Error

A favorable change in the conditions associated with the operations of the firm is defined by the inequality $Q_t' > R_t$ and an unfavorable or adverse change by the inequality $Q_t' < R_t$. The difference $(Q_t' - R_t)$ is defined as X. The differentiating feature of case 2A is the possibility of the existence of a nonzero X, i.e., a positive or negative capitalized value of a change in expected income, iX. Expected income, E_t, can be represented in two equivalent ways:

$$E_t = D_t + (Q_t' - X) + iQ_t' \qquad (3a)$$

$$E_t = D_t + R_t + iR_t + iX, \qquad (3b)$$

since $(Q_t' - X)$ equals R_t and $(R_t + X) = Q_t'$. Expressions (3a) and (3b) can serve as a general representation of expected income for both case 1A and case 2A, X and iX being nonzero in case 2A and zero in case 1A. Retained earnings are assumed to earn the same rate of return as did the previously existing equity, and the change in conditions is assumed to be reflected only in changes of expected income, not in changes in the discount rate.

The term iR, the increase in income due to retention of earnings, may be subtracted from both preceding equations (3a) and (3b) with no loss of generality. Differential bias in comparing the two income concepts does not result and the comparison is simplified. The omission of iR, future returns from retained earnings, in case 1A is the omission of a common constant, which does not change the results of the comparison of the two concepts of income. In case 2A, the omission of iR gives a slight, added differential disadvantage to $(D + Q')$ for firms whose $Q' > R$, and an equal advantage to $(D + Q')$ for firms whose $Q' < R$. Since firms with $Q' > R$ may be presumed as numerous as firms with $Q' < R$, the results of the comparative analysis with the omission of iR may be considered reliable. Subtracting iR from (3a) and (3b) yields the following:

Case 1A, $(X = 0)$:

$$E_t = D_t + Q_t' \qquad (2a')$$

$$E_t = D_t + R_t \qquad (2b')$$

Case 2A, $(X \neq 0)$:

$$E_t = D_t + Q_t' - (1-i)\,X \qquad (3a')$$

$$E_t = D_t + R_t + iX \qquad (3b')$$

In case 1A, retained earnings are now equal to the change in equity. Therefore, both measures, dividends-plus-equity-change $(D_t + Q_t')$, and book earnings $(D_t + R_t)$, are equally appropriate for representing expected income.

In case 2A, however, conclusions are different if the book earnings measure, $(D_t + R_t)$, is employed to represent expected income [the right hand side of equation (3b′)], as E_t is distorted by iX.

$$(D_t + R_t + iX) - (D_t + R_t) = iX \qquad (4)$$

If $(D + Q')$ is employed to represent (3a′), E_t will be distorted by $-(1-i)X$:

$$(D_t + Q_t') - (1 - i)\,X - (D_t + Q_t') = -(1 - i)\,X \qquad (5)$$

The book earnings distortion, iX, and the dividends-plus-equity-change distortion, $-(1 - i)\,X$, have opposite signs since the distortions associated with the two concepts of income are inversely

related. The magnitude of the distortion introduced by the use of the income concept $(D + Q')$, will be $|X(i - 1)/iX| = (1/i) - 1$ times greater than the magnitude of the distortion in the opposite direction introduced when the earnings concept is employed. Since it may safely be assumed that i is less than 0.50 per annum for most firms, the factor $[(1/i) - 1]$, would be greater than unity and book earnings, a superior measure for the set of conditions assumed in case 2A.

IV. *The Accounting Distortion*

Next, the assumption that the book earnings measure is not affected by accounting distortions, a proposition introduced at the outset, is relaxed. The book earnings measure, $(D_t + R_t)$, is now assumed to be either larger or smaller than true income. How does the introduction of this possible distortion affect the foregoing analysis?

A. Case 1B: No Shift and Accounting Error

Under the assumption of no change in conditions, the introduction of an accounting error will doubtlessly make the $(D + Q')$ measure of income more advantageous, simply because it is not affected by accounting practice. The condition of no change in expected income insures the adequacy of $(D + Q')$; the accounting error reduces the usefulness of book earnings. If the "no shift" assumption is a good description of reality, dividends plus equity change will be preferable when accounting error is present.

B. Case 2B: Shift and Accounting Error

Under the assumption of a change in conditions, the introduction of an accounting distortion reduces the relative advantage of the book earnings measure, as would be expected, but does *not* render it inferior. For the majority of actual cases, book earnings remains the better measure.

Let a shift be considered in conjunction with an accounting distortion equal to A. By substituting book earnings for expected income, the net total distortion would be:

$$(D_t + R_t + iX) - (D_t + R_t + A) = iX - A. \qquad (6)$$

When A and iX possess the same sign, i.e., if expected income changes in the direction of the accounting distortion, the book earnings measure performs best. Given such conditions, the accounting distortion in book earnings compensates for the error introduced into book earnings by not including the change in expected income.[3]

However, when A and iX have different signs, the total distortion associated with book earnings is at a maximum. It is this case, least favorable to book earnings, which is investigated below.[4]

How large must A be relative to iX and relative to income to pass the advantage to the $(D + Q')$ measure? How often does $(D + Q')$ become superior? In order to answer these questions, a few additional symbols are in order.

Let distortion C be the distortion contained in $(D + Q')$.

$$C = |-[X(1 - i)]| = |-[iX[(1/i) - 1]]| \qquad (5a)$$

Let distortion B be the maximum possible distortion of book earnings.

$$B = |iX| + |A| \qquad (6a)$$

It is first shown that whenever $|A| < |[(1/i) - 2]\, iX|$, then $B < C$. The

[3] Of course, even in this case, which is propitious to book earnings, the "correction" may overshoot, i.e., it is possible that A will be larger than |iX|.

[4] On *a priori* grounds, the A errors may be expected to be randomly distributed about zero.

formal statement that $B < C$ can be written as:

$$|iX| + |A| < |iX[(1/i) - 1]| \qquad (7)$$

Inequality (7) above can be written as:

$$|A| < |iX[(1/i) - 1]| - |iX|$$

$$|A| < |iX[(1/i) - 2]|. \qquad (7a)$$

Therefore as long as $|A|/|iX| < [(1/i) - 2]$, B is smaller than C, and the distortion due to book earnings is smaller. Put differently, the absolute magnitude of the accounting error, $|A|$, has to be more than $[(1/i) - 2]$ times larger than $|iX|$ in order to shift the advantage away from the earnings concept. If i is assumed to be 0.05, the factor $[(1/i) - 2]$ equals 18. At $i = 0.08$ the factor equals 10.5. At $i = 0.10$ it equals 8. At $i = 0.125$ it equals 6. Only when i is larger than 0.333, a very unlikely rate, is the factor less than unity. Clearly, if the accounting distortion is not several times larger than the shift in expected income, the book earnings measure remains superior.

Next, it is shown that as long as the shifts in expected income are not extremely small, book earnings are a better measure even when the accounting errors are relatively large.

It is of interest to determine how small a proportion iX must be of book earnings, $(D_t + R_t)$, in order to shift the advantage away from book earnings. For this purpose, the accounting distortion, A, is expressed as a proportion, K, of book earnings:

$$A = K(D_t + R_t).$$

The condition that $C < B$ is expressed symbolically in (8) to yield (8a):

$$|iX[(1/i) - 1]| < |iX| + |K(D_t + R_t)| \qquad (8)$$

$$|iX[(1/i) - 2]| < |K(D_t + R_t)|$$

$$|iX| < |(K/[(1/i) - 2])(D_t + R_t)| \qquad (8a)$$

Expression (8a) indicates that shifts in expected income must be smaller than $K/[(1/i) - 2]$ times earnings not affected by accounting distortion for the earnings measure to lose its advantage, even when the shift, X, and the accounting error, A, have opposite signs. If it is assumed that the error K equals 20 percent of book earnings, an assumption of a rather substantial accounting error, and that $(1/i)$ is equal to or smaller than 10, a rather realistic assumption, the factor $K/[(1/i) - 2]$ will be at most .025. Thus, even if the accounting distortion is as large as 20 percent of earnings, a percentage shift in expected income as small as 2.5 percent, is sufficient to render the earnings concept preferable.

The above result brings out the crucial point that even a relatively small change in expected income, iX, makes the book earnings measure preferable. And since, in actuality, shifts over 2.5 percent of expected income are the rule, not the exception, book earnings will tend to be a better measure in the majority of cases.[5]

V. *Summary*

In this paper book earnings have been compared to $(D + Q')$ under assumptions of the absence and presence of a shift in expected income and of accounting error. Book earnings and $(D + Q')$ were adjudged equally desirable in case 1A, book earnings to be more desirable in 2A, and $(D + Q')$ to be more advantageous in 1B. It was decided that in case 2B, in which there was a shift in expected income and accounting error, book earnings were superior even for very small shifts in expected income and for rather large, opposite accounting errors. Since it is believed that accounting errors of less than 20 percent and shifts in expected income larger than

[5] The case for book earnings is even stronger. Recall that in almost half the cases, iX and A will have the *same* signs, in which case $|A| - |2iX|$, not just $|A|$ would have to be greater than $|iX[1/i - 2]|$ for $(D + Q')$ to be preferred.

2.5 percent are the rule for case 2B, and since most firms fall into the 2B category, one may conclude that book earnings are the better measure of expected income. Consequently, book earnings divided by the market value of the equity are the better measure of market yield.

Dividends plus equity change is a better measure of past *ex post* income. It includes both dividend income and realizable capital gains income, which together represent a complete and realistic measure of total *past* income. Consequently, $(D + Q')$ divided by market value of equity provides the better *ex post* rate of return on equity capital.

Interest Arbitrage and the Forward Exchange Market: A Comment

► WILLIAM A. SALANT

I am happy to accept the Editor's kind invitation to restate in this *Review* a comment on a passage in a recent article by Professor Henry Goldstein.[1] Since my comment was originally made briefly and rather casually in private correspondence, I shall take advantage of this opportunity to amplify and, I hope, to clarify it.

The point at issue relates to the response of international short-term capital movements to a change in relative interest rates in national money markets. Professor Goldstein contended (1) that the bulk of short-term funds that move internationally in response to interest rate differentials is covered against exchange risk by forward exchange transactions, and (2) that changes in relative interest rates between countries will lead foreign exchange dealers, who have "quick minds and sharp pencils," almost immediately to mark foreign exchange rates, spot and forward, up or down, so that the change in the forward premium or discount offsets the change in the interest rate differential, thus eliminating any inducement to covered interest arbitrage. Goldstein concluded that little or no short-term capital movement will be induced by the change in interest rate differentials.

This point was adduced to support the general theme of the article, which is that the effort of the U.S. monetary authorities to reduce the net outflow of short-term capital by maintaining a higher level of short-term rates than domestic considerations indicated has been ineffective. I am not concerned here with this general theme. Nor am I addressing myself to the question of the responsiveness of short-term capital movements to interest rate differentials in any particular historical situation, such as that of the United States in recent years. This note is confined to Goldstein's reasoning, as summarized above.

As stated, his argument appears to be quite general and unqualified, and to claim too much. It seems to imply that, as long as foreign exchange dealers remain in full possession of their faculties, (and their pencil sharpeners), interest parity will invariably be maintained in the face of a change in rate differentials, and interest arbitrage will always be negligible.

Now it may well be true that, under certain conditions, interest rate differentials will induce little or no movement of short-term funds. The determining factors, however, are not the quickness of mind and sharpness of pencil of foreign exchange dealers, but considerations

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[1] Henry N. Goldstein, "The External Costs and Benefits of Recent Monetary Policy," *The National Banking Review*, 2, June 1965, pp. 557-558.

similar to those that determine the effect of a change in demand or supply conditions in markets generally. These factors will be (1) the magnitude of the shift in the demand and supply schedules of potential interest arbitragers caused by the change in relative interest rates, and (2) the position and elasticity of the demand and supply schedules of all participants in the foreign exchange market. (One might also add such additional factors as the repercussions of international capital flows on domestic money rates, and the effect of the initial change in interest rates on expectations as to the foreign exchange rates. We shall assume for the present purpose that such factors may be neglected.) The forward exchange premium or discount will adjust to the new interest rate differential without any movement of short-term capital between countries only in the special case in which the supply and demand of all transactors in the forward exchange market, other than interest arbitragers, are completely unresponsive to changes in the forward exchange premium or discount, that is, when these supply and demand schedules have zero elasticity.

This conclusion can best be supported by examining a hypothetical case. Let us assume that initially the rate on 3-month bills in both New York and London is 3 percent, and that both the spot and the 3-month forward rate for the pound stand at $2.80. (In order to simplify the problem, we can assume that the 3-month bill is the only form of short-term paper, and that all forward exchange transactions are conducted on a 3-month basis.)

The bill rate in New York now rises to 4 percent. Let us follow Professor Goldstein and assume that foreign exchange dealers, alert to the appearance of an interest rate differential, promptly restore interest parity, quoting forward sterling at a 1 percent per annum premium against the spot rate. We can again simplify by assuming the entire adjustment will be made in the forward rate, which will be marked up to approximately $2.807, leaving the spot rate unchanged at $2.80.[2]

Is this new position one of equilibrium? In order to answer that question, we must examine the response of participants in the forward market other than interest arbitragers. We may divide them into two major classes: (1) those who engage in forward transactions in order to cover foreign exchange positions acquired through other transactions, such as exporting and importing; we shall refer to them generically as "traders"; (2) those who assume a net foreign exchange position as a result of their forward transactions in the hope of making a profit from changes (or the absence of change) in the rate; we shall refer to them as "speculators."[3]

As the prototype of a trader, let us consider an American importer who has contracted to make a payment in sterling in three months. Before the appearance of a forward premium on sterling, he could cover his commitment by buying forward sterling at no extra cost as compared with the spot rate. Now, however, it will cost

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[2] The premium of .7 cents on 3-month forward sterling is equal to ¼ percent of the spot rate, equivalent to 1 percent per annum. The statement that the forward rate is at interest parity when the forward discount or premium, expressed as a percent per annum, is equal to the interest rate differential is only an approximation. See Alan R. Holmes and Francis H. Schott, *The New York Foreign Exchange Market*, Federal Reserve Bank of New York, 1965, p. 53, f.n. 14. A more complete analysis would have to take account of the possibility that part of the rate adjustment is made in the spot rate.

[3] Other classifications are possible. For example, Stein distinguishes between speculators and risk-bearers. (See Jerome L. Stein, *The Nature and Efficiency of the Foreign Exchange Market*, Essays in International Finance, No. 40 International Finance Section, Princeton University, October 1962.) Since this distinction is not significant for the present purpose, we shall not attempt to draw it.

him ¼ of 1 percent for 90 days, or at the rate of 1 percent a year, to cover. He may be willing to pay this cost in order to avoid the risk of exchange fluctuation. Alternatively, he may decide to wait until the payment is due and buy sterling in the spot market at that time, taking his chances on the risk of fluctuations in the spot rate in the interval. If the spot rate remains unchanged over the 3-month period, he will be able to buy his sterling at $2.80, thus saving the 1 percent per annum premium.

If there is any elasticity in the demand for forward exchange on the part of traders, the demand will be reduced in response to the rise in the forward rate from equality with the spot rate to a premium. On the other hand, a British importer who is committed to a dollar payment in three months will find that he can make an extra profit of ¼ of 1 percent, or 1 percent per year, by buying his dollars forward at a discount from the spot rate. If he was formerly disposed to leave his commitment uncovered and take the risk of exchange fluctuation, he may now be induced to cover himself by a forward purchase of dollars against payment in sterling. Thus the supply of forward sterling will be increased if that supply has any elasticity at all with respect to the change in the forward premium.

We turn now to the "speculators." When 3-month sterling goes to a premium, someone who expects no change in the spot rate can hope to make a profit by selling forward sterling at $2.807 in the expectation of buying it back three months hence at $2.80 in the spot market. If any participants in the market are receptive to this opportunity, the supply of forward sterling at $2.807 will be further increased. Moreover, there may be others, bullish on sterling, who thought forward sterling a good bull speculation at $2.80 but not at $2.807. They will withdraw from the market as buyers of forward sterling.

In short, if the supply and demand functions of traders and speculators, considered in the aggregate, are at all sensitive to variations in the forward premium, the shift to a 1 percent per annum premium on 3-month sterling will result in an excess supply of forward sterling offered by traders and speculators.

Whether this excess supply will cause a decline in the premium depends on the conditions of supply of interest arbitrage funds. If enough arbitragers regard short-term investments in New York and London, covered for exchange risk, as perfect substitutes, interest arbitrage funds will move in sufficient volume from London to New York to take up the excess supply of forward sterling offered by traders and speculators at the 1 percent premium.[4] If, however, the arbitragers' demand is insufficient to absorb the net supply offered by traders and speculators, the forward premium will tend to decline. As the premium declines, the movement of interest arbitrage funds, and hence the demand for forward sterling on the part of arbitragers, may be expected to increase, at least after a certain point, while the net supply offered by traders and speculators will diminish. The two will be equated at some level of the forward

[4] The assumption that dollar and sterling investments are regarded as perfect substitutes for each other is, of course, not realistic. It implies, among other things, that the cost of transferring funds from one money market to the other is zero. It used to be said that departures from interest parity of ½ of 1 percent were required to induce significant interest arbitrage, but observers report that potential arbitragers now respond to much smaller margins. See Holmes and Schott, *op. cit.*, p. 55; and Paul Einzig, "Some Recent Changes in Forward Exchange Practices," *Economic Journal*, Sept. 1960, pp. 486-488.

premium between zero and 1 percent per annum.[5]

We can say little more about the equilibrium level of the forward premium except that it will be determined by the position and shape of the relevant supply and demand schedules. One thing we can say is that, if the market has confidence in the maintenance of exchange parities and of the limits of variation of the spot rate around the parities, the net supply of forward exchange offered by traders and speculators will tend to become quite elastic as the forward rate approaches the limits. For example, as the forward sterling rate approaches $2.82, an American importer with a sterling liability, who is confident that the spot rate will not be permitted to exceed $2.82, runs little risk of exchange loss, and enjoys a substantial opportunity for a (relative) gain if he leaves his position uncovered, planning instead to buy his sterling in the spot market when the payment is due. Similarly, if the spot rate is $2.80 and the market anticipates no particular reason for it to appreciate, speculators can expect to profit by selling forward at $2.82 and buying sterling spot at some lower rate, such as $2.80, when their forward contracts mature. Finally, some interest arbitrage funds may move on an uncovered basis because their owners regard the risk of appreciation of sterling above $2.82 as negligible. All of these reactions will tend to depress the forward rate. Thus, although interest parity may require a forward rate above $2.82, the market anticipation that the spot rate will not exceed that level may keep the forward rate from doing so. For this reason, departures from interest parity are particularly likely when the forward rate approaches or touches the upper or lower support point.

[5] This analysis is similar to that of S. C. Tsiang, "The Theory of Forward Exchange and Effects of Government Intervention on the Forward Exchange Market," IMF *Staff Papers*, April 1959, pp. 95-99, and of John H. Auten, Foreign Exchange Rates and Interest Rate Differentials," *Journal of Finance*, March 1963, pp. 13-16, which is based on Tsiang's study.

The External Costs and Benefits of Recent Monetary Policy: A Comment

►HENRY C. WALLICH

The Editor of *The National Banking Review* has kindly invited me to restate some questions relating to Henry N. Goldstein's excellent article, "The External Costs and Benefits of Recent Monetary Policy," [1] originally raised in correspondence with the author. Stripped of detail, my points came down to the following:

1. If it is true that very little was gained by raising short-term rates, and surely something was lost, as Goldstein argues, would we not have been better off lowering these rates? If this paradoxical conclusion is not appropriate, does that not cast doubt upon the premise?

2. If the marginal cost of attracting additional dollar holders is as high as Goldstein says, would we not be better off selling gold to reduce our liabilities?

3. Can exchange dealers alter forward rates without change in the flow of forward transactions? A reduction in the forward discount on sterling presumably would increase the supply of hedge sales, with some improvement in the demand for forward and probably spot dollars. For speculators, a small change in forward rates may mean a large return on investment if that investment consists of a modest margin deposit demanded by the dealer on a large forward position. Would not the volume of speculative transactions thus also be responsive?

If these simple questions should become an occasion for Henry Goldstein to supply additional underpinning to some of his startling conclusions, they will have served their purpose.

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[1] *The National Banking Review*, 2, June 1965, p. 551.

The Elasticity of the Speculative Demand Curve for Forward Exchange: A Rejoinder

► HENRY N. GOLDSTEIN

Mr. Salant and Professor Wallich have made it clear that more fundamental considerations than dealers' quick minds and sharp pencils determine how the flow of covered funds responds to a change in the interest rate spread between New York and London. Clearly, dealers' responses merely reflect the actions of more basic transactors, revealing only the dealers' "consensus" on where spot and forward rates are likely to be pushed by the resulting orders of arbitragers on the one hand and "speculators" on the other.[1] And to the extent that dealers guess wrong, they will soon have to modify their rate quotations if their currency inventories are to remain in reasonable balance.[2]

If the London/New York interest rate differential changes, the resulting effect on the flow of covered funds will depend mainly, I believe, on three considerations: (1) the impact of the interest rate change on the market's expectations of the future level of the spot exchange rate; (2) the responsiveness of arbitragers to any change that may develop in the covered incentive; (3) the reactions of speculators to a change in the forward rate, given a neutral expectational effect under (1) above.[3] The first of these considerations corresponds to the resulting *shift* in the speculative supply-demand curve for forward exchange; the second to the elasticity of arbitragers' supply of forward exchange with respect to changes in the covered-interest differential (in basis points); the third to the elasticity of the speculative supply-demand curve with respect to changes in the absolute level of the forward rate.

The most important of these considerations may be the impact on "confidence." If the Bank of England raises its Bank rate, previous expectations that sterling would probably be devalued may be sharply altered. Speculators who formerly refrained from buying forward sterling even at discounts well below the current support floor for spot sterling may

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[1] Official intervention in spot and forward markets may complicate (or simplify) the dealers' problems.

[2] Of course, dealers themselves often act as covered-interest arbitragers or as speculators; for expositional purposes, we abstract from this possibility.

[3] We use the term "speculator" in a broad sense to denote all operators whose forward positions are a function of the existing forward rate and the expected level of the spot rate in the future. Thus our "speculator" also includes Mr. Salant's "trader." Indeed, "speculators"—for our purposes—include all private transactors in the forward market other than covered-interest arbitragers.

now come in as eager buyers at any price below 2.80. Indeed, this was precisely the reaction of the exchange market when the Bank rate was hoisted to 7 percent in July 1961. On the other hand, nothing of the sort happened when the Bank of England raised its rate to 7 percent in November 1964. In this instance, the market seemed to interpret the Labor Government's belated green light to the Bank of England as a last-ditch gesture preceding a possible devaluation, rather than as a clear signal of the Government's determination to defend the 2.80 par value. Other, less dramatic, changes in market sentiment can be discerned in the wake of other, less drastic, changes in monetary policy.[4]

Unfortunately, it seems impossible to make confident generalizations about the direction and magnitude of this important confidence effect. Our analysis must proceed therefore under the artificial assumption that a policy-induced change in the interest rate spread will leave market expectations of the future level of the spot exchange rate substantially unchanged.

There is a great deal of evidence to suggest that a substantial amount of covered funds will move out of dollar-denominated money-market assets, or vice versa, if covered yield incentives exceed 30 to 40 basis points.[5] Thus, if we start from an initial null-incentive position, and interest rates change appreciably (say because of a rise in British Bank rate), arbitragers will generally be willing to move large sums of money out of dollars and into sterling if they can find forward cover at a price that still leaves them with a 30 to 40 basis point (or perhaps even smaller) covered advantage. The question is: Can they find the forward cover? Under the assumption of unchanged expectations, the answer clearly depends, as my critics stress, on the response of "speculators," i.e., on the elasticity of the speculative supply-demand curve for forward exchange.

As Mr. Salant has argued, there is good reason to expect this elasticity to be quite high when the forward rate approaches either the upper or lower support point for spot sterling, *provided* that the market has confidence in the maintenance of the 2.80 par value and in the limits of permitted variation of the spot rate around 2.80. In my view, however, there is also a persuasive case for the converse proposition: that this elasticity is likely to be quite low if the market fears a devaluation, or if the forward rate is not near one or another of the existing support limits for the spot rate.

If, for example, 3-month forward sterling were to decline by an amount sufficient to offset completely a 1 percent per annum increase in British money-market rates, the decline in the absolute 3-month rate from its previous level would be only ¼ of 1 percent. If the rise in U. K. money-market rates were as large as 2 percent per annum, the absolute decline in the 3-month forward rate that would

[4] Thus the reduction in British Bank rate from 7 percent to 6 percent this past June stimulated the following comment by *The Economist*, June 5, 1965, p. 1188:

> Externally, the key point is that the amount of foreign money London nowadays attracts depends not only or even primarily on the absolute level of its money rates compared with other centres, but on the net differential after allowing for the cost of forward exchange cover. This in turn depends on "confidence"; and if a reduction in the money rates themselves brings an improvement in confidence with it, it may actually improve the net covered differential in London's favour and bring more money in at six per cent than came in at seven. Certainly there were paradoxical dangers in leaving the rate at seven for too long, and having this read abroad as a sign of weakness rather than of determination.

[5] Perhaps the most persuasive evidence is the close correlation between yields on Euro-dollar

neutralize the incentive for covered flows would be ½ of 1 percent. For shorter maturities, the required percentage decline in the forward rate would in each case be less.[6] In short, *relatively minute absolute changes in forward rates correspond to relatively impressive changes in forward premiums or discounts expressed in percent per annum terms.*

If traders and speculators do not have any confident feeling about the probable level of the spot rate n days hence—which I believe is often the realistic assumption to make—why should they materially increase their purchases of forward sterling just because it has become ¼ of 1 percent, or ⅛ of 1 percent cheaper? Such a response seems particularly unlikely in circumstances where speculators have reason to feel that there is some *nonnegligible* chance that sterling may be devalued during the next 3 months.

I. *A Possible Objection*

Even though nonarbitrage transactors might be insensitive to small changes in the forward rate, *per se*, might they not be highly sensitive to the resulting change in the level of the forward rate *relative* to the spot rate? Thus, suppose that a rise in British interest rates were followed by an absolute decline of 1/64 of 1 percent in the price of forward sterling with spot sterling unchanged. Surely, it might be argued, this change in the spot-forward relationship could significantly affect the pattern of nonarbitrage transactions. Thus, a person hedging against a devaluation of the pound would switch from buying forward dollars (which have now become more expensive) to buying spot dollars; and a speculator who is bearish on the pound would switch from selling forward sterling to selling spot sterling, etc. Thus, the net demand for cheaper forward sterling would increase relative to the net demand for spot sterling, and arbitragers could expect to find cover with relative ease at attractive forward rates.

Admittedly, this would be the expected outcome provided that other things have remained equal. But this proviso is not satisfied. By assumption, the initiating factor "causing" the decline in forward sterling was a rise in British interest rates. If the discount on the forward pound does not widen correspondingly, it will become relatively cheaper to hedge against, or speculate on, a sterling devaluation by buying the now absolutely more expensive forward dollars. Why? Because in this way one can avoid paying the extra interest charges on a sterling loan in London. The opportunity cost of hedging or speculating through the spot market rather than the forward market is the net difference between the interest cost involved in borrowing the "suspect currency" less the interest return available from investing an equivalent amount of the "strong currency" after conversion through the spot market. And this opportunity cost has risen with the rise in British interest rates![7]

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deposits adjusted for the forward premium on the dollar and loan rates paid by the British local authorities. Since 1960, the spread between these two series has rarely exceeded 30 basis points. It seems clear that covered arbitrage by banks in the Euro-dollar market has been responsible for this close alignment. See Bank for International Settlements, *Thirty-Fifth Annual Report, Basle*, 14th June 1965, pp. 142-143; also Bank of England *Quarterly Bulletin*, June 1964, pp. 106-107.

[6] In general, a change in the interest rate spread of d percent per annum will be offset by a percentage change in the n-day forward rate of d.n./365.

[7] For a penetrating analysis of the issue, see John Spraos, "Speculation, Arbitrage, and Sterling," *Economic Journal*, LXIX, March 1959, pp. 1-21.

II. *Some Empirical Evidence*

We have argued that substantial changes in the London/New York interest rate differentials are not likely to stimulate significant flows of covered arbitrage funds if considerable uncertainty continues to exist regarding the future level of spot sterling. We have also suggested that such uncertainty often exists in the real world. This two-part hypothesis can be tested as follows:

For a number of observations, compare the pattern of interest rates and exchange rates shortly before and shortly after a perceptible change in monetary policy in either center. If a substantial change in the uncovered or raw interest rate differential is generally matched by a change of similar magnitude in the covered arbitrage incentive, then clearly a significant incentive has been created for covered funds to move (assuming, initially, that rates were in the neighborhood of interest parity); and, presumably, covered funds will move in appreciable volume, at least until the flow of funds itself leads exchange dealers to alter spot and forward quotations so as to eliminate, or greatly reduce, the covered incentive. If, on the other hand, a substantial change in the raw interest rate differential is generally matched by a relatively insignificant change in the covered differential, no significantly changed incentive for the movement of covered funds ever develops and there is no reason for covered funds to move in any volume. This second outcome would occur, of course, in those instances where dealers judged the elasticity of nonarbitrage funds in the forward market to be relatively small, and so adjusted forward margins to offset, or largely offset, changes in the raw interest rate differential.

The most clear-cut recent changes in "monetary policy" have been changes in British Bank rate.[8] Since the return to convertibility in 1958, there have been 14 such changes. Our test consists of a comparison—for each of these 14 Bank rate actions—of the changes in the relevant covered and uncovered spreads on 3-month Treasury bills (New York vs. London) over a period of one week bracketing the Bank rate action. Specifically, the data used show the changes in the covered and uncovered yield spreads on 3-month U.S./U.K. Treasury bills from the Friday morning preceding a Bank rate change to the Friday morning following such a change.[9]

With the one exception noted in the preceding footnote, the data used give us changes in the relevant covered and uncovered differentials from a date six days before a change in British Bank rate to one day after. It would perhaps be even more desirable to use figures that show the change in the relevant data from the close of business on the day prior to a Bank rate change to a few hours (or even minutes) after the Bank rate change was announced. However, the published Friday morning figures seem adequate for our purposes for the following reasons: (1) A change in Bank rate is a shock to the financial markets. Generally, little

[8] For our purposes, a change in "monetary policy" corresponds to an official action that leads to a significant change in the level of short-term interest rates in either center.

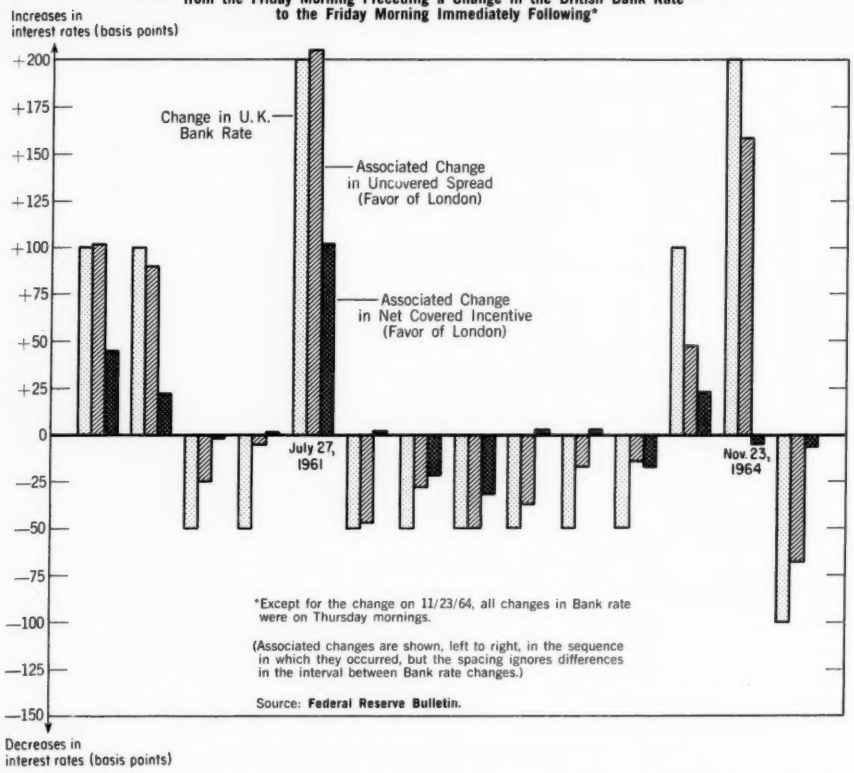
[9] All but one of the 14 changes in British Bank rate in our sample were announced at the opening of Thursday morning's financial markets in London. The exception was the increase in Bank rate—from 5 to 7 percent—on November 23, 1964, a Monday.

British Treasury bill rates used are Friday-opening market offer rates in London. The U. S. bill rate used is the market offer rate at 11:00 A.M. in New York. The percent per annum premium or discount on the forward pound was computed on the basis of midpoint quotations (between bid and offered rates for sterling) in New York as of 11:00 A.M. Friday morning.

Data for 1960 through 1963 taken from *Federal Reserve Bulletin*, October 1964, pp. 1255-1256. Later data are from later issues of the *Federal Reserve Bulletin*.

Chart 1

Association Between Changes in the Uncovered and Covered Spreads on U. S./U. K. Treasury Bills from the Friday Morning Preceding a Change in the British Bank Rate to the Friday Morning Immediately Following*


Increases in interest rates (basis points)
+200
+175
+150
+125
+100
+75
+50
+25
0
—25
—50
—75
—100
—125
—150
Change in U. K. Bank Rate
Associated Change in Uncovered Spread (Favor of London)
Associated Change in Net Covered Incentive (Favor of London)
July 27, 1961
Nov. 23, 1964
*Except for the change on 11/23/64, all changes in Bank rate were on Thursday mornings.
(Associated changes are shown, left to right, in the sequence in which they occurred, but the spacing ignores differences in the interval between Bank rate changes.)
Source: Federal Reserve Bulletin.
Decreases in interest rates (basis points)

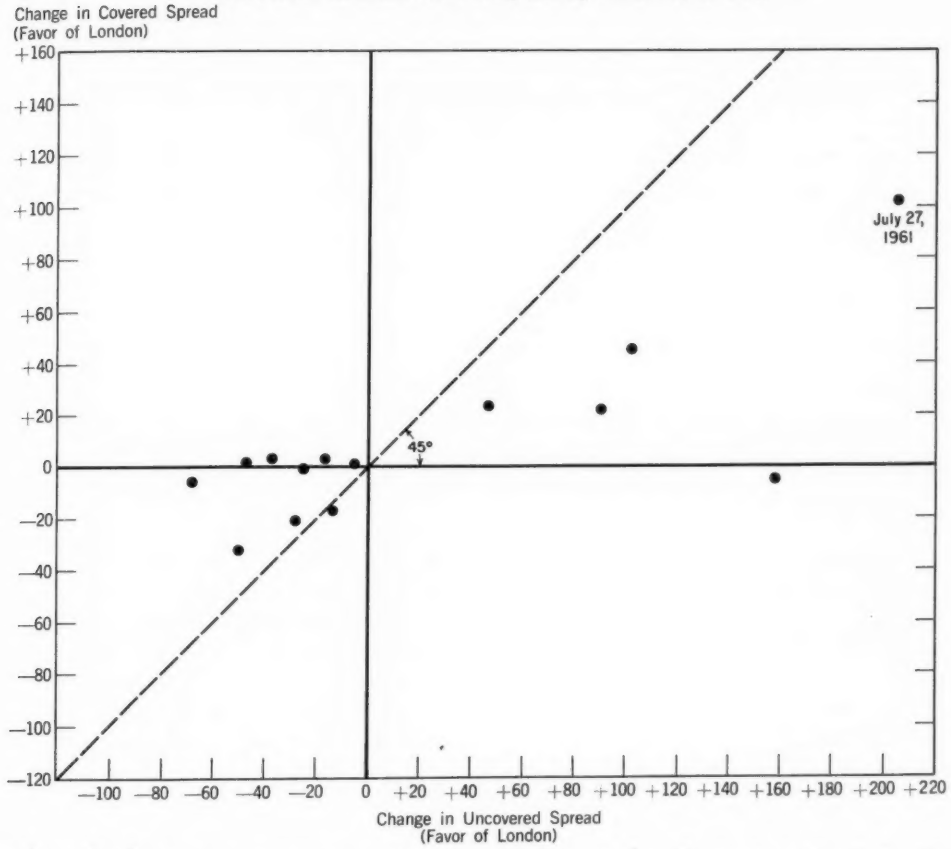
money-market business is transacted in the first 24 hours after a Bank rate change, since investors and dealers are busy digesting the news and judging where rates (that are "firm" for sizable transactions) are likely to settle. (2) More significantly, the new weekly issue of British 91-day bills is auctioned off on Friday mornings.[10] Going market rates on outstanding bills (which are the only bills of 3-month maturity available for immediate purchase) are likely to move in close step with the market's expectations of the yield at which the new bills will be auctioned. And these expectations do not become "firm" until just before, or even some time after, the deadline for the submission of sealed bids for the new issue in London.

The results of our 14 comparisons are shown in Charts 1 and 2. As a brief study of Chart 1 shows, movements in covered and uncovered arbitrage margins, over periods immediately spanning changes in the British Bank rate, have generally been quite dissimilar. Indeed, in 5 of the 14 joint observations, the covered arbitrage margin actually moved in the opposite direction from the uncovered margin! The average nature of the observed relationship between changes in the covered and uncovered spread can perhaps be grasped most clearly from Chart 2. Here, changes in the covered spread are plotted on the vertical axis, and changes in the uncovered spread are plotted on the horizontal axis. Since equal distances are

[10] Such bills are not "delivered" to buyers until the following week.

Chart 2

Association Between Changes in the Uncovered and Covered Yield Spreads on U.S./U.K. 3-Month Treasury Bills From the Friday Morning Preceding a Change in the British Bank Rate to the Friday Morning Immediately Following



used on both axes to measure a given change in interest rate margins, a one-to-one correspondence would occur if all the points plotted fell on the 45-degree line. In fact, it seems clear that a "least squares" regression line would have a slope of less than 15 degrees! In other words, if we could legitimately regard our 14 observations as sample values selected from a large, "normal bivariate universe," the maximum likelihood estimate of the change in the covered differential for a 100 basis point change in the uncovered differential would be something less than 30 basis points. This inference would be all the more likely if we thought it legitimate to omit from our sample set the observation for July 27, 1961. In this instance, market reports suggest that the behavior of the forward discount was dominated by the effect of the Government's restrictive program on confidence. In particular, the authorities' willingness to raise the Bank rate so dramatically erased a good part of the market's doubt that the 2.80 par value would be defended "come what may." [11]

The data presented in Charts 1 and 2 can also be analyzed by computing various averages. Relevant averages, in basis points, for all 14 observations are:

[11] See *The Economist,* August 5, 1961, p. 565.

I–a)	Average change in Bank rate	86	(77)*
I–b)	Average change in the uncovered bill-rate spread	67	(53)
I–c)	Average change in the covered spread	18	(12)
	Averages for the five Bank rate increases are:		
II–a)	Average increase in Bank rate	140	(125)
II–b)	Average increase in the uncovered bill-rate spread	107	(99)
II–c)	Average increase in the covered spread	37	(21)
	Averages for the nine decreases in Bank rate are:		
III–a)	Average decrease in Bank rate	56	
III–b)	Average decrease in the uncovered bill-rate spread	32	
III–c)	Average decrease in covered spread	8	

Figures in parentheses in the first two groups are averages obtained omitting figures relating to the July 27, 1961, Bank rate action.
If a change in the covered spread was in the opposite direction from the change in the raw spread, it was treated as a minus entry in reckoning the total for computing the average.

These data suggest that, as a general rule, no significant flow of covered funds is likely to be set in motion (or curtailed) by changes in the New York/London interest rate differential—at least not so long as the market suspects the maintenance of existing parities, or speculators feel that spot rates at various dates in the future may differ materially and in the "wrong direction" from current relevant forward rates. In short, we infer: (1) that the relevant nonarbitrage demand for forward sterling (when that commodity becomes cheaper or more expensive as a result of an interest rate change) is very often quite inelastic; and (2) that exchange dealers are aware of this condition when it exists, and respond by adjusting the forward margin, thereby neutralizing most of the effect of a changed interest rate spread on covered arbitrage margins.

These inferences are subject to several possible objections: (1) that the rapid adjustment of forward rates in the direction of interest parity (as in our "sample observations") represented dealers' responses to an actual large-scale movement of covered funds, occurring in the 24 hours between the change in the Bank rate and the time at which our closing covered-incentive figures were recorded; (2) that dealers tended consistently to underestimate the elasticity of the nonarbitrage demand for forward sterling, and hence, that their initial offsetting markdowns (or markups) subsequently stimulated a substantial volume of net speculative purchases (or sales) and that this, in turn, provided the cover for a substantial movement of covered funds; (3) that the "confidence effect" of the Bank rate changes in our sample systematically biased our results. Certainly, none of these possibilities can be safely ruled out without further investigation. But the burden of proof now rests, I submit, on those who deny our hypothesis.[12]

[12] Such a denial is implicit in Herbert J. Grubel's interesting article, "Profits from Forward Exchange Speculation," *The Quarterly Journal of Economics*, May 1965, pp. 248-262. Grubel argues that the "speculative elasticity"

must be high, because if speculators in the forward dollar/sterling market had followed any one of several simple decision rules during the period from mid-1955 to mid-1961 they would have earned a high rate of return. Accordingly, speculators must have done just this. Having profited thereby, they must be increasingly willing to "take a view" on the dollar/sterling rate in the future. To the present writer this argument seems imaginative but unconvincing.

Current Legal and Regulatory Developments

I. *Lending Limits*

A ruling has been issued by the Comptroller as to whether a national bank may lend its maximum loan limit to each of two individuals who plan to place the proceeds of their loans into a corporation, the stock of which is 50 percent owned by each of them. It was held that the loan obligations of two individuals who place loan proceeds in their wholly owned corporation need not be combined in applying the bank's 10 percent lending limit to a single borrower under 12 U.S.C. 84, if the loans are granted on the basis of each borrower's own credit standing or independent ability to meet repayment arrangements that are satisfactory to the bank as a credit matter. If, however, the bank makes the loans to the shareholders in reliance on the credit standing of the corporation with its earnings as the source of repayment and credit basis for both loans, such an arrangement would, in substance, be a single extension of credit, and thus the loans would have to be combined with each other as well as with loans to the corporation in determining whether the bank has exceeded its 10 percent lending limit to a single borrower.[1]

Pursuant to authority contained in Exception 8 to the lending limit (12 U.S.C. 84(8)), the Comptroller, with the approval of the Secretary of the Treasury, has adopted an amendment to the regulation (12 CFR 6) relating to loans by national banks[2] secured by obligations of the United States.

Under the former regulation, a national bank was permitted to make loans to a single borrower secured by obligations fully guaranteed both as to principal and interest in an aggregate amount not in excess of 25 percent of the bank's capital and surplus, although loans were permitted to be made without limitation based on the bank's capital and surplus when secured by direct obligations of the United States. The regulation, as amended, removes entirely any statutory lending limit based on the bank's capital and surplus in the case of loans secured by obligations fully guaranteed both as to principal and interest by the United States. It provides that the obligations to any national bank of any person, copartnership, association, or corporation, secured by not less than a like amount (at par or face value) of either direct

[1] Similar rulings were discussed in *The National Banking Review*, 2, March 1965, p. 525; and 2, December 1964, p. 264.

[2] Under 12 U.S.C. 248(m), the regulation is also applicable to state chartered banks which are members of the Federal Reserve System.

obligations of the United States [3] or obligations fully guaranteed both as to principal and interest by the United States, shall not be subject to any limitation based upon the capital and surplus of the bank.

The applicability of the statutory lending limit based on a bank's capital and surplus [4] to a loan by a national bank to a municipality to finance facilities to be constructed by the city and leased to an agency of the Federal government was the subject of another ruling. The loan was to be secured by a deed of trust on the property and an assignment of rentals due under the lease, and was to be evidenced by a note of the city, which would be a general obligation secured by the full faith and credit of the city. The Comptroller held that to the extent that the note of the city would be a general obligation, i.e., an obligation supported by the full faith and credit of the city, the advances in connection with the note would not be subject to any statutory lending limit based on the bank's capital and surplus. The Comptroller stated, however, that prior to making any advances in excess of the bank's usual 10 percent lending limitation, counsel for the national bank should make certain that the note is a general obligation of the city, i.e., determine that the city has pledged its full faith and credit in accordance with applicable law.

A ruling which relates to the authority of a national bank to make unsecured loans up to the loan limit of 10 percent of a bank's capital funds to each of two corporations, one of which is a majority-owned subsidiary of the other, has been issued by the Comptroller. It was held that a national bank may make unsecured loans up to 10 percent of its unimpaired capital stock and unimpaired surplus funds, to each of two corporations where one corporation is a majority-owned subsidiary of the other, provided that: each of these corporations conducts its own separate business operations; each has earnings and net worth which adequately supports that credit, and upon which the bank relies in extending credit to it, independent of and apart from its investment in or subsidiary relationship to the other corporation; the credit extension to each corporation is for the purpose of supplying working capital or other financing requirements of that corporation and not those of its parent or subsidiary; neither corporation guarantees or otherwise assumes any liability or responsibility for the loans to the other; and the credit extension to each corporation is separate from and not related to the extension of credit to the other. It was stated by the Comptroller that in these circumstances the provision of 12 U.S.C. 84 concerning loans to parent and subsidiary corporations, in the light of its history and purpose, is not applicable. However, in a related ruling, the Comptroller held that loans by a national bank to two corporations, which are subsidiaries of a corporation not indebted to the bank, must be combined in applying the 10 percent limitation of 12 U.S.C. 84 on loans to a single obligor, where the subsidiary corporations are merely integral parts of a single credit basis and economic activity the revenue from which constitutes the sole source of repayment for both corporate loans.

In another ruling, the Comptroller held that to the extent that a mortgage loan

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[3] See *The National Banking Review*, 2, December 1964, p. 263, for a discussion of the last amendment to Regulation 6 (12 CFR 6).

[4] Title 12 U.S.C. 84. As was indicated in *The National Banking Review*, 2, September 1964, p. 93, and 1, June 1964, p. 599, in determining 10 percent of the lending national bank's capital and surplus, the term "unimpaired surplus fund" as used in 12 U.S.C. 84 includes all capital accounts (other than capital stock) that are derived from either paid-in-capital funds or retained earnings, not subject to known charges, and that are considered interchangeable by resolution of the bank's board of directors.

is guaranteed by a state or political subdivision and such guaranty is supported by a pledge of the full faith and credit of the political unit, the loan is not subject to the limitations (of 12 U.S.C. 84) based on the lending national bank's capital and surplus. Accordingly, to the extent that a mortgage loan is guaranteed by a state industrial building commission and such guaranty is supported by a pledge of the full faith and credit of the state, the loan would not be subject to the limitations of 12 U.S.C. 84. The Comptroller also held that to the extent that a mortgage loan is supported by such a guaranty, it would not be a real estate loan within the meaning or subject to the requirements of the statute [5] which imposes limitations on real estate loans by national banks.

II. *Investment Securities*

The Comptroller has ruled that certain General Housing Loan Bonds of the New York State Housing Finance Agency are eligible for dealing in, underwriting, and unlimited holding by national banks. The Comptroller found that the New York State Housing Finance Agency is a public corporation, one purpose of which is to provide safe and sanitary dwelling accommodations at rentals which families and persons of low income can afford, and which the ordinary operations of private enterprise cannot provide. He further found that the bonds of the Agency are the direct and general obligations of the Agency; that the full faith and credit of the Agency are pledged for their payment; that the bonds are further secured by a pledge of the mortgages securing mortgage loans made by the Agency from the proceeds of the sale of the bonds, by a pledge of and lien upon the payments required to be made to the Agency by the mortgagors, and by a capital reserve fund established and maintained by the Agency for the benefit of bondholders, containing an amount equal to the maximum amount of principal and interest maturing and becoming due on all outstanding bonds of the Agency; that all bonds of the Agency are secured equally and proportionately by the foregoing security; and that the capital reserve fund of the agency—to which portions of the proceeds of the earlier bonds have been added—was established by an appropriation by the State of New York as required by the provisions of the New York State Housing Finance Agency Act. In this connection, it was noted by the Comptroller that the New York State Housing Finance Agency Act provided that in order to insure the maintenance of the capital reserve fund, there must be annually apportioned and paid to the Agency for deposit in the capital reserve fund such amounts as are certified as necessary to restore the capital reserve fund to an amount equal to the maximum amount of principal and interest maturing and becoming due on the bonds of the Agency. The Comptroller concluded that the bonds of the New York State Housing Finance Agency are the general obligations of a political subdivision of the State of New York as defined in sections 1.3(d) and (e) of the Investment Securities Regulation.[6] He held that the General Housing Loan Bonds of the New York State Housing Finance Agency are "public securities" as set forth in section 1.3(c) of the Investment Securities Regulation [7] and that, therefore, they are eligible for dealing in, underwriting, and unlimited holding by national banks under the authority granted to them by 12 U.S.C. 24.[8]

The Comptroller, in another ruling, concluded that certain bonds issued by

[5] Title 12 U.S.C. 371.

[6] Title 12 CFR 1.3(d) and (e).

[7] Title 12 CFR 1.3(c).

[8] The ruling was published at 12 CFR 1.166 on November 6, 1965.

The Port of New York Authority are "public securities" as defined in the Investment Securities Regulation and are, therefore, eligible for dealing in, underwriting, and unlimited holding by national banks. It was noted in the ruling that the Port of New York Authority is a municipal corporate instrumentality of the States of New York and New Jersey, the purpose of which is to provide transportation, terminal and other facilities of commerce with the Port of New York District. It was further noted that the proceeds of the subject bonds were to provide funds for capital expenditures in connection with facilities of the Authority and for purposes incidental thereto; that the Authority possesses resources sufficient to justify faith and credit for the payment of principal and interest on the bonds, which are thus direct and general obligations of the Authority, and that the bonds of the Authority are, therefore, the general obligations of a political subdivision of the State of New York as defined in the Investment Securities Regulation. The Comptroller ruled, therefore, that these bonds of The Port of New York Authority are eligible for dealing in, underwriting, and unlimited holding by national banks.[9]

In another ruling, the Comptroller held that the 10 percent investment limitation (of paragraph Seventh of 12 U.S.C. 24) has separate applicability to each of four separate bond issues of a municipal industrial development board, where the purpose of, and proceeds from, each bond issue was to acquire and lease real estate and related facilities to economically and legally separate industrial tenants. The Comptroller found that property and facilities acquired from the proceeds of each of the four issues were leased to a particular industrial lessee; that each issue was payable solely from the revenues to be derived from the semi-annual rentals paid by the lessee under net noncancellable leases for the facilities financed by proceeds of the issue; and that each of the four industrial tenants were economically and legally separate entities. It was concluded by the Comptroller that, in these circumstances, each of the four issues of the municipal industrial development board was a separate obligor within the meaning of section 1.6(a) of the Investment Securities Regulation (12 CFR 1.6(a)), and that, therefore, the 10 percent investment limitation of paragraph Seventh of 12 U.S.C. 24 and the Investment Securities Regulation may be applied separately to each of the issues.[10]

III. *Real Estate Loans*

The Comptroller has issued a ruling intended to clarify the authority of a national bank to participate in real estate loans. He has held that a national bank may participate at the outset with others in the making of a real estate loan, and that it may subsequently purchase a participation in an existing real estate loan. It was stated in the ruling that it is a prudent and often necessary banking practice for a national bank to purchase a participation in an existing real estate loan without becoming the owner of the entire loan, and that such transactions are within the power of a national bank and are not inconsistent with the provisions of applicable Federal law[11] when the interests of the participating banks are adequately protected by the terms of the participation agreement.[12]

The Comptroller has held that a national bank may make a home mortgage

[9] The ruling was published at 12 CFR 1.167 on November 6, 1965.

[10] Related rulings were discussed in *The National Banking Review*, 2, March 1965, pp. 426-427.

[11] Title 12 U.S.C. 371.

[12] A similar ruling was discussed in *The National Banking Review*, 1, September 1963, pp. 135-136.

loan which is excessive in relation to the appraised value of the real estate securing the loan without violating the provisions of Federal law (12 U.S.C. 371) applicable to real estate loans by a national bank, if such excessive portion of the loan is based upon the general credit standing of the borrower.[13] As was previously stated by the Comptroller, a national bank may make a real estate loan within the meaning and limitations of applicable Federal law and, in addition thereto, make a second loan to the same borrower which is secured substantially by one or more factors other than real estate, such as the general credit standing of the borrower, and in connection therewith, take as additional security a junior lien on real estate, a first lien on which serves to secure the real estate loan. Accordingly, a national bank may, for example, make a home mortgage loan and at the same time make a home improvement loan to the same borrower. Similarly, it may make a home mortgage loan in an amount equal to the full purchase price of the home where that part of the loan not in excess of 80 percent of the appraised value of the real estate is secured by a first lien on the real estate, and has an amortization schedule not in excess of 25 years, and where that part of the loan in excess of such 80 percent is made by the bank in reliance on the credit standing and earnings of the borrower and is to be repaid in installments over a 5-year period.[14]

In another ruling in which it was noted that a mortgage on real estate will be subject from time to time to various liens, charges and encumbrances, which, although may be paramount to a bank's security claim in the form of a mortgage, do not substantially affect the value or use of the real estate, the Comptroller recently held [15] that liens for current water charges, liens for taxes and assessments imposed by a governmental body for the current year, zoning laws and ordinances, construction liens not yet filed or relating to obligations not overdue, permits, rights-of-way, easements, leases and encumbrances will not prevent such mortgage from constituting a first lien within the meaning of applicable Federal banking law.[16]

The Comptroller has issued a ruling concerning the legality of a mortgage loan made by a national bank and evidenced by a note limiting the obligor's liability to his interest in the mortgaged premises securing the loan. The note provided that, on default thereunder, no deficiency or other personal judgment could be obtained against the obligor. The Comptroller held that a national bank may make a mortgage loan by the terms of which the obligation of the maker to repay the loan is limited to the real estate transferred as security therefor, and his obligation with respect to the collateral is limited to a warranty of validity as of

[13] In this connection, it was also previously stated by the Comptroller that a real estate loan within the meaning of 12 U.S.C. 371 is any loan secured by real estate where a bank relies upon such real estate as the primary security for the loan. Where a bank in its judgment relies substantially upon other factors such as the general credit standing of the borrower, guaranties or security other than real estate, the loan does not constitute a real estate loan within the meaning of 12 U.S.C. 371, although as a matter of prudent banking practice it may also be secured by real estate.

[14] See *The National Banking Review*, 2, June 1965, p. 575, and March 1965, p. 428, for discussions of, and references to, similar rulings involving loans which were not real estate loans but which were secured by real estate in some form.

[15] The Comptroller previously ruled that a first lien on real estate, within the meaning of applicable Federal banking law, is any lien which grants to the holder thereof a claim against the property so secured which is prior to the rights of all others with respect thereto. Such a lien is normally created by an instrument in the form of a first mortgage or deed of trust.

[16] Title 12 U.S.C. 371.

the date of its transfer.[17] The ruling noted that where such a loan is secured by real estate and the bank relies upon the real estate as the sole security for the loan, it is a real estate loan within the meaning of applicable Federal law (12 U.S.C. 371) and is, therefore, subject to the limitations contained therein.

IV. *Mortgage Servicing*

In a recent ruling, the Comptroller held that, although a national bank may service its own mortgage loans and the mortgage loans owned by others,[18] all loans made by a national bank must be made as principal. It was also held in the same ruling that a national bank may close in its own name, and warehouse mortgage loans which do not conform to the requirements of the statute governing real estate loans by national banks,[19] provided that in making such loans there is primary reliance on a firm commitment from a financially responsible mortgage investor to purchase such loans within a stated period of time. It was noted that such loans are not real estate loans within the meaning and subject to the requirements of that statute.

V. *Acquisition of Finance Company*

The Comptroller has issued a ruling concerning the acquisition and operation of a commercial finance company. It was held that it is within the power of a national bank to acquire and hold all the stock of a corporation engaged in the business of a commercial finance company which is empowered to factor, make loans secured by inventory, accounts receivable, equipment, real estate and security interests in and liens on other assets, make unsecured loans, and issue letters of credit.[20]

It was also held: that a national bank may, upon its acquisition of a commercial finance corporation, enter into a management contract with a subsidiary corporation to manage the bank's commercial finance assets and operation; that a national bank may purchase and hold loans and other assets of a commercial finance company, to the extent that such assets are conforming assets for national banks; and, that all loans and assets so held would thus be subject to the limitations of 12 U.S.C. 24, 84 and 371. It was further held by the Comptroller that the subsidiary would be an affiliate for the purposes of 12 U.S.C. 371c and, therefore, that the bank's loans to such affiliate would be subject to the collateralizing requirements and amount limitations of that section and that a national bank may guarantee the debts and obligations of such a subsidiary.

VI. *Investment in Bank Premises*

Federal banking law [21] permits the investment by a national bank in the stock, bonds, debentures, or other obligations of a corporation holding the premises of the bank without the approval of the Comptroller, where the amount of the investment (together with the amount of indebtedness of the corporation that is an affiliate of the bank and the value of premises held directly by the bank) does not exceed the value of the bank's capital stock. Previously, the Comptroller held that, although his approval should be ob-

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[17] Related rulings appeared in *The National Banking Review*, 2, September 1964, p. 94, and 1, September 1963, p. 134.

[18] It was previously recognized by the Comptroller that the servicing of mortgages is a proper banking function, and that a national bank may carry on this function either directly, or indirectly through a subsidiary corporation whose stock it owns. See *The National Banking Review*, 2, March 1965, pp. 430-431.

[19] Title 12 U.S.C. 371.

[20] For other rulings on the subject of a national bank doing indirectly through a subsidiary corporation what it may do directly, see *The National Banking Review*, 2, June 1965, p. 576, March 1965, pp. 430-431, and 1, December 1965, p. 264.

[21] Title 12 U.S.C. 371(d).

tained before the consummation of any plans under which a bank's investment in premises will be increased to an amount exceeding its capital stock, it is not required for investments by the corporation holding the premises of the bank prior to investment in the corporation.[22] In this connection, the Comptroller recently held that a national bank's option to purchase stock in an unrelated realty company which owns the bank's premises is not an investment in bank premises, but that, following the exercise of its option, the bank would have an investment in an affiliate bank premises corporation within the meaning and subject to the requirements of Federal law. Prior approval of the Comptroller is, therefore, necessary in order for a bank to exercise its option to purchase such stock in the event that the purchase price, together with the bank's other investment in bank premises and the outstanding debt of the realty corporation, would exceed the amount of the bank's capital stock.

VII. *Directors' Responsibilities*

The Comptroller has ruled on the need for a board of directors' examination of the finances of a national bank where an audit has been performed by a firm of certified public accountants. He held that it is the responsibility of a national bank's board of directors to assure the financial soundness of the national bank which it directs and that this responsibility may not be delegated. Although the board of directors may, within its sound discretion, appoint a firm of certified public accountants to aid it in the fulfillment of this responsibility, and although the firm of accountants, acting for the board, may conduct the actual examination of the bank's records, full responsibility for the financial soundness of the bank nevertheless remains with the bank's board of directors.[23]

VIII. *Loans Secured by Coins*

In a ruling relating to loans secured by coins, the Comptroller held that the requirement that such a loan by a national bank be limited to 70 percent of the face value of the coins does not apply to a loan secured by large 1-cent, one-half-dime, and 3-cent coins. It was held, however, that inasmuch as during a period when coins are scarce it is not feasible to distinguish between coins kept out of circulation by collectors of recognized amateur standing and those kept out by speculators and hoarders, and inasmuch as the very scarcity of coins has made coins which ought to remain in circulation objects of special interest to coin collectors and dealers, the limitation is applicable to all coins similar to those now in actual circulation, including 5-cent coins minted before 1913 and other coins minted before 1915.[24]

IX. *Registration of Securities*

A ruling has been issued relating to the issuance by national banks of bearer depositary receipts, and the exemption of the issuance of such receipts from the requirements of the Comptroller's registration and disclosure regulation.[25] The ruling noted that the purpose of the issuance of bearer depositary receipts is to improve the marketability of small-denomination bankers' acceptances by relieving investors of the necessity for maintaining records and for safekeeping of a variety of smaller denomination acceptances. The ruling also noted that small-denomination bankers' acceptances are virtually un-

[22] See *The National Banking Review*, 2, September 1965, p. 115; 1, June 1964, p. 601, and September 1963, p. 136.

[23] See *The National Banking Review*, 3, September, 1965, p. 116.

[24] Discussion of previous rulings relating to loans secured by coins appeared in *The National Banking Review*, 2, June 1965, p. 577, and March 1965, p. 430.

[25] Title 12 CFR 16.

marketable at the prime acceptance rate, and that depositary receipts would ordinarily be readily saleable in established acceptance markets. In view of these facts, the short-term duration of bankers' acceptances, and the established market for such commercial paper, the Comptroller held that the issuance, offer, and sale of such bearer depositary receipts for bankers' acceptances were exempt from the registration and disclosure requirements of his regulation.

In another ruling, the Comptroller granted an exemption from the requirements of his registration and disclosure regulation for the issuance of short-term promissory notes. It was found that the notes would have maturities of up to 270 days; that they would be issued by banks having deposits of at least $300,000,000 and would be sold in units of $500,000 or $1,000,000; that there would be no advertising of the offer of these notes nor would any advertisement be placed in any media upon the completion of an offering; and that the notes would be offered and sold to regularly established clientele, which consisted of institutional investors whose investment decisions are determined by professional financial executives. The Comptroller concluded that, in view of the class of banks that would issue the notes, the dollar amount of the units to be offered, the short-term maturities of the notes, the proposed method of placement, the absence of any advertising, and the sophisticated nature of the potential purchasers, the offering and sale of these short-term notes were exempt in all respects from his registration and disclosure regulation.[26]

X. *Stock Option and Stock Purchase Plans*

As the result of a recent amendment of the Comptroller's regulations,[27] a national bank may now issue its stock certificates to those who have purchased a bank's stock pursuant to the exercise of stock options, if the stock option or purchase plan is approved by the bank's shareholders and the Comptroller of the Currency, prior to the submission of a notice to the Comptroller that the purchase price of the stock has been paid into the bank, and prior to the receipt of the Comptroller's certificate of approval. Accordingly, stock certificates representing shares purchased pursuant to the exercise of stock options may be validly issued to such purchasers immediately upon receipt of the purchase price by the bank.

However, under the amended regulation, the increase in bank capital represented by stock certificates issued under such stock option plans may not be regarded as part of the bank's capital in applying limitations relating to investment in banking premises (12 U.S.C. 371d), bank indebtedness (12 U.S.C. 82), branches (12 U.S.C. 36), bank lending (12 U.S.C. 84), bank investments (12 U.S.C. 24), and other like purposes, until a notarized notice specifying the amount paid into the bank therefor is executed by the president, vice president, or cashier of the bank and filed with the Comptroller, until the Comptroller's certificate has been obtained specifying the amount of the increase of capital stock and his approval thereof, and until this amount has been duly paid in as part of the capital of the bank.

XI. *Community Development*

The Comptroller has held that national banks may lend funds to development credit corporations which are organized to further the physical, economic, and social development of their communities. It was further held that, although such extensions of credit are subject to the usual

[26] Title 12 CFR 16.

[27] The amendment was made to the Comptroller's regulation (12 CFR 13) governing national bank employee stock option and stock purchase plans.

statutory lending limits (of 12 U.S.C. 84), in appraising the credit quality of these loans National Bank Examiners will take into consideration the publicly beneficial purpose of such commitments.[28]

XII. *Interlocking Directorates*

The Comptroller recently stated that in determining whether a city, town, or village is contiguous or adjacent to a city, town, or village for the purposes of applying the provisions of the statute [29] prohibiting interlocking directorates between a national bank and another bank which is a member of the Federal Reserve System, consideration should be given to the location of the inhabitants and buildings of the particular city, town, or village. He further stated that, to the extent that the corporate limits of a city, town, or village bear no relationship to the location of its inhabitants and buildings and thus constitute lines denoting the location of a political unit, void of any further significance, such limits should not be regarded as conclusive, and that consideration should also be given to the question whether there is any substantial conflict of interest between the banks in that city, town, or village and the banks in the other city, town, or village.

XIII. *Interest Charges by a National Bank*

The Comptroller has issued a ruling regarding the authority of a national bank to make loans at the higher rates permitted under a state regulatory loan act where there is a provision contained in that act which seeks to prevent its applicability to national banks. The Comptroller stated that the making of loans is a lawful exercise of a power of a national bank specifically granted by Congress in paragraph Seventh of 12 U.S.C. 24, that national banks make loans under that authority alone, and that the only limitations with respect to the interest charged on such loans are contained in the provisions of 12 U.S.C. 85 which, to some extent, incorporates state law as a measuring rod in determining maximum interest rates. It was held by the Comptroller that under applicable law and relevant court decisions, a national bank clearly may charge interest at the maximum rate permitted by applicable state law to any competing state institution; that where state law permits a higher rate on specified classes of loans, a national bank may lawfully make loans at this higher rate subject only to those limitations relating to the classification of loans which are material to the determination of the rate of interest; that a national bank may lawfully charge the highest rate permitted to any competitor in the state in which it is located, including a lender licensed under a state regulatory or small loan act, irrespective of whether the national bank is similarly licensed; and, that any provision in state legislation which purports to prevent a national bank from the exercise of these or other rights under Federal law (12 U.S.C. 24 and 85) is inoperative and ineffective.[30]

XIV. *Exercise of Trust Powers*

Applicable Federal law [31] authorizes the Comptroller to grant to national banks

[28] It was previously held that national banks, as a necessary business expense, may make reasonable contributions to local community agencies and groups to further the physical, economic, and social development of their communities. Such contributions may take the form of an investment in a corporation organized to carry on such activities, but the aggregate investment in such corporations may not exceed 2 percent of the bank's capital and surplus. See *The National Banking Review*, 2, June 1965, p. 578, and 1 September 1964, p. 96.

[29] Title 15 U.S.C. 19.

[30] For a discussion on this same matter, see *The National Banking Review*, 2, September 1964, p. 95.

[31] Title 12 U.S.C. 92a.

the right to act as trustee, or in any other fiduciary capacity in which state banks, trust companies, or other corporations which come into competition with national banks are permitted to act under the laws of the state in which the national bank is located. The Comptroller has observed that the fiduciary powers granted by state law to state banks or trust companies frequently includes the fiduciary function of agency in the management of real estate; that state law frequently empowers mortgage banking corporations which compete with national banks in the financing, soliciting, warehousing, and servicing of mortgage loans to perform the fiduciary function of agency in the management of real estate; and, that state law frequently permits corporations dealing in real estate and mortgages, which (insofar as their mortgage financing and banking activities are concerned) are also in competition with national banks, to receive the general fiduciary powers granted to state banks or trust companies. The Comptroller therefore concluded that a national bank with trust powers may, pursuant to 12 U.S.C. 92a, also perform the same fiduciary function as agent in the management of real estate that is granted by state law to state banks or trust companies, or to other corporations that come into competition with national banks in that state.

XV. *Banking Hours*

As was noted in a previous issue of *The National Banking Review*,[32] national banks and banks located in the District of Columbia may lawfully remain closed on legal holidays and on such days as are designated by the Comptroller. In this connection, the Comptroller has announced a policy of authorizing the closing of one or more banks whenever the safety of bank personnel or protection of bank property requires that such action be taken. It is also the policy of the Comptroller to permit a national bank to close on its own initiative whenever an emergency does not afford the bank an opportunity to obtain the Comptroller's prior approval. It has been stated by the Comptroller that a national bank lawfully may close in emergency circumstances such as riot or hurricane irrespective of action or inaction by state authorities, and that a national bank may, and indeed must, place human safety and welfare ahead of business.

XVI. *Interest Rate Limitations*

The Comptroller has issued a ruling in response to an effort by a state supervisor of banking to exercise jurisdiction over national banks in his state in relation to state regulation of the payment of interest on time and savings deposits. Legal action was threatened against any national bank which violated the state interest rate regulation and, in addition, each national bank in the state was directed to return a questionnaire concerning its policies with regard to the payment and compounding of interest on time and savings deposits. The questionnaire stated that failure to respond would be construed as evidence of noncompliance with the order not to pay interest in excess of the state regulation.

It was noted by the Comptroller that under Federal law,[33] a national bank may pay interest on time and savings deposits at a rate which does not exceed the maximum rate authorized by law to be paid upon such deposits by state banks or trust companies organized under the law of the state in which the national bank is located. The Comptroller held that the payment of interest on time and savings

[32] See *The National Banking Review*, 2, June 1964, p. 603.

[33] Title 12 U.S.C. 371.

deposits by a national bank is a matter of Federal and not state law, and that compliance with applicable Federal law is a question for determination by the Comptroller, whose office is charged with the responsibility of supervising the national banking system. He further held that a state banking authority, when demanding information of a national bank, is attempting to exercise visitorial powers, which are vested solely in the Comptroller of the Currency where national banks are concerned, with certain exceptions provided by Congress, none of which were applicable in the present case.

XVII. *Ownership of Bank Stock*

A ruling has been issued with respect to the ownership of the stock of other banks by a national bank. The ruling involved a corporation which, under 12 U.S.C. 1841, was a bank holding company since it owned 25 percent or more of the voting shares of more than one bank. Also involved was a national bank which was also a bank holding company, since all the capital stock of the corporation was held by trustees for the benefit of all shareholders of the national bank as a class. Following advice that no objection would be interposed to the transaction by either the Comptroller of the Currency or the Board of Governors of the Federal Reserve System, the trust was terminated and ownership of all of the corporation's capital stock was transferred to the national bank. The Comptroller expressed the opinion that such ownership by a national bank would be legal whether the corporation's capital stock were transferred to the bank following termination of the trust, or the corporation dissolved and its bank stock transferred directly to the national bank.

XVIII. *Financing of Real Estate*

In a recent ruling, it was held that a national bank may finance the acquisition of airport facilities by several municipalities.[34] The Comptroller stated that, as an incident to such financing, the bank may construct the facilities, retain title thereto, and lease the facilities under a lease agreement at the expiration of which the municipalities will become the owners of the facilities, and under the terms of which the commitment of the municipalities to make the requisite payment of lease rentals is supported by a power to levy a tax sufficient to produce annually the necessary funds to pay the lease rental. The bank was cautioned that an opinion of counsel should be obtained with respect to whether the cities possess the requisite power to enter into such a lease agreement and to levy the requisite taxes.[35]

XIX. *Credit Cards Issued by National Banks*

The Comptroller has issued a ruling which again recognizes the authority of a national bank to extend credit through the use of credit cards issued by it or a subsidiary corporation. Noting that the credit card business has long been an integral part of the commercial banking industry, the Comptroller stated that the legal principles governing an extension of credit controlled by the use of a validated identification card are the same as those pursuant to which credit has historically been extended through travelers' letters of credit, revolving consumer credit plans, and other similar devices. It was observed by the Comptroller that the essence of the validated identification or credit card business is to permit a subscriber to charge purchases of goods and services at participating vendors; that the person to whom credit is thus extended is

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[34] Under paragraph Seventh of 12 U.S.C. 24.

[35] Similar rulings were discussed in *The National Banking Review*, 3, September 1965, p. 110.

required to pay such charges to the issuer of the card on the terms specified in his agreement with the issuer; that before a credit card is approved the issuer determines the credit-worthiness of the subscriber and his ability to meet obligations arising through the use of the card; that the participating vendors of goods and services also enter into agreements with the issuer; that the vendors agree to assign the charges to the issuer promptly and provide evidence thereof; and, that the issuers agree to pay the vendors for such charges promptly and at an agreed discount. The Comptroller concluded, therefore, that the purchase of such charges by the issuer is, in principle, the same as many forms of commercial finance, including accounts receivable financing. The Comptroller noted that, to the extent that such charges and accounts are purchased by a bank under an agreement by the vendor to repurchase it upon default, the vendor's obligation to repurchase is subject to the bank's lending limit and is measured by the total unpaid balance of the paper owned by the bank, less the applicable vendor's reserves against defaulted paper, if any. Where the vendor's obligation to repurchase is limited, it is measured by the total amount of paper the vendor may ultimately be obligated to repurchase.

XX. *A National Bank as Surety*

It was recently held that a national bank may act as surety on the bond of an individual co-fiduciary. It was noted in the ruling that, generally, a national bank may not bind itself as surety to indemnify others in the event of loss unless it has a substantial interest in the performance of the transaction involved, and that, generally, it is not within the power of a national bank to act as surety on the bond of an executor, administrator, or other fiduciary. However, the Comptroller concluded that a national bank which is a co-fiduciary with an individual may, in certain circumstances, be held responsible for acts of the other fiduciary; that such potential liability creates a substantial interest on the part of a national bank in the faithful performance of the duties of the bank's co-fiduciary; and that, therefore, under relevant court decisions, a national bank may act as surety on the bond of an individual who is a co-fiduciary with the bank.

XXI. *Pledge of Assets*

The Comptroller recently held that the authority of a national bank to pledge its securities to secure funds of a Federal Home Loan Bank (under 12 U.S.C. 265) may in no way be subject to the provisions of state law or the regulation or jurisdiction of the superintendent of banking of the state in which the bank is located.[36] In a related ruling, the Comptroller held that under 12 U.S.C. 90, any national bank may, upon the deposit with it of any funds by any state or political subdivision, give security for the safekeeping and prompt payment of the funds so deposited to the same extent and of the same kind as is authorized by the law of the state in which the bank is located in the case of other banking institutions in the state. The Comptroller thus held that a national bank may pledge only the same kinds of securities to secure the deposits of a state treasurer which a state chartered bank in the same state may pledge for such deposits. The Comptroller further held, however, that in a state in which a state chartered bank may pledge

[36] See *The National Banking Review*, 3, September 1965, p. 117, where the Comptroller held that, inasmuch as the funds of Federal Home Loan Banks consist, in part, of public money invested by the United States, and, inasmuch as control of the deposit of such bank's funds is exercised by an agent of the United States, deposits made by Federal Home Loan Banks are deposits of "public money" for which national banks may pledge security under 12 U.S.C. 265.

only certain securities to secure state deposits, the state does not have jurisdiction either as to whether a particular national bank may pledge its securities for such deposits, or as to the amount of its investment portfolio which may be pledged by a particular national bank for such deposits.

A ruling has been issued relating to the legality of a proposal by a national bank which, in order to avoid a high premium on a surety bond required in the course of litigation, sought to make an arrangement with a bonding company in which investment securities owned by the bank would be pledged in favor of the bonding company to secure the surety bond. The Comptroller, noting that under paragraph Fourth of 12 U.S.C. 24 a national bank may defend a law suit brought against it as fully as natural persons, held that, just as a national bank may pay a premium on a surety bond the posting of which may be necessary in the course of litigation to which it is a party, the bank may also pledge its assets in lieu of a surety bond or as a means of reducing the premium thereon.[37]

XXII. *Letters of Credit*

Several recent rulings of the Comptroller relate to letters of credit issued by national banks. In each of these rulings it was stated that a letter of credit is an enforceable promise by a bank that it will pay a specified amount of money for the account of its customer upon certain terms and conditions. It was noted that such a promise is generally found in an instrument which contains the following information: the name of the bank that is issuing the credit, the bank customer for whose account the credit will be extended, the beneficiary to whom payment will be made, the maximum amount of credit to be extended, the stated time during which the credit is available, as well as a statement of the terms and conditions which must be met before payment will be made.

In one of these rulings, the Comptroller stated that, although the issuance of letters of credit and other such agreements to make loans constitutes a lawful exercise of the powers of a national bank and is necessary to the business of banking,[38] a national bank should not issue a letter of credit which neither limits the maximum amount of credit to be extended nor states the time during which the credit is available. In the absence of such limitations, the bank is not in a position either to insure that it will not be required to lend in excess of the limitations of 12 U.S.C. 84, or to refuse to advance funds at a future date should there be a diminution of the borrower's creditworthiness.

In another ruling, the Comptroller held that a national bank should not, on behalf of a customer, furnish an instrument for the state's protection against loss due to unreported and unpaid state sales taxes on automobile sales. The national bank had been asked by several of its customers who were automobile dealers to issue to each of them what was described as an irrevocable letter of credit having a fixed maturity and a maximum stated value. The Comptroller concluded that, irrespec-

[37] The authority of a national bank to pledge its assets was the subject of discussion in *The National Banking Review*, 3, September 1965, pp. 115-116.

[38] The Comptroller has previously held that the issuance of letters of credit, and other such agreements to make loans upon the fulfillment of certain conditions, constitutes a lawful exercise of the powers of a national bank and is necessary to the business of banking. The making and management of such commitments require the exercise of prudent banking judgment to prevent the creation of loans in excess of the lending limits of 12 U.S.C. 84, even though such limitations are not applicable until funds are actually advanced pursuant to such commitment. See *The National Banking Review*, 2, September 1964, p. 95.

tive of the label "letter of credit," the bank had been asked to indemnify the state for sales taxes upon default, and that the bank could not act as a guarantor of such a tax liability inasmuch as it had neither the requisite substantial interest nor an earmarked deposit.[39]

XXIII. *Disclosure of Information*

The Comptroller in a recent ruling refused assistance to an individual involved in litigation with a national bank. It was stated in the request for assistance that two officers of a national bank had given conflicting answers under oath to depositions taken in the course of a lawsuit involving an alleged misappropriation of funds. The Comptroller was requested to investigate the matter and disclose his findings, so as to clarify this conflict of testimony and thereby be of assistance in the trial of the case against the bank. In the ruling denying the request for assistance, the Comptroller assured the litigant against the bank that the matter would be investigated, that it would receive all appropriate attention, and that if circumstances warranted the matter would also be brought to the attention of any other government agency which might have a proper interest in the matter. The litigant was further advised, however, that the Comptroller does not, and indeed may not, investigate matters in order to assist private litigants in actions brought against national banks, irrespective of the wrongdoing which may be alleged in such actions. The ruling pointed out that the successful functioning of the Comptroller's Office depends in great measure upon its ability to investigate and obtain information about the affairs of the banks and their customers on a confidential basis, and that, therefore, the Office will disclose such information only when specifically authorized by the Congress.[40]

XXIV. *Litigation Involving Decisions of the Comptroller*

The United States Court of Appeals for the Fourth Circuit has reversed a district court's holding [41] that the Comptroller's approval of the *establishment of a national bank branch* [42] is invalid if it is issued without a hearing which satisfies the requirements of the Administrative Procedure Act.[43] The Court of Appeals concluded that the Administrative Procedure Act does not require the Comptroller to hold an adversary hearing prior to and in connection with his issuance of a national bank branch certificate, and stated that neither statute nor legislative history required such a hearing. The Court further held that procedural due process is not offended by the Comptroller's long-standing administrative practice of holding no adversary hearings, and that the absence of a hearing requirement provision in the Federal banking law [44] raises no constitutional question because the omission was within the power of Congress. The Court, which stated that the Comptroller's exercise of discretion in passing upon branch appli-

[39] The Comptroller noted that, in contrast to a letter of credit, a guaranty is a promise to pay the debt of a primary obligor upon default of such obligor, and that under applicable law a national bank may become a guarantor of an obligation of another if the bank has a substantial interest in the performance of the transaction involved, or has an earmarked deposit sufficient in amount to cover the bank's total liability as indemnitor. A national bank may also lawfully endorse or otherwise guarantee notes or other obligations sold by the bank for its own account.

[40] In this connection, see *The National Banking Review*, 2, June 1965, p. 579, and 1, June 1964, pp. 603-604.

[41] *First National Bank of Smithfield* v. *First National Bank of Eastern North Carolina and James J. Saxon, Comptroller of the Currency*, 232 F. Supp. 725 (E.D. N.C. 1964).

[42] Under 12 U.S.C. 36(c).

[43] Title 5 U.S.C. 1001 et seq.

[44] Title 12 U.S.C. 36(c).

cations was subject to judicial review, and that the phrase "restrictions as to location" contained in Federal branching law does not advert to economic factors of need and convenience found in state branching law, but refers exclusively to a geographical determination, vacated the order of the district court annulling and enjoining the issuance of the Comptroller's branch certificate and remanded the case to the district court for a review *de novo* of the Comptroller's action. In a dissenting opinion, it was stated that, although the Comptroller was not required to conduct adversary hearings, the case should be remanded to the district court for its return to the Comptroller with instructions to make available to the plaintiff bank certain information it requested after which a conference should be held at which the plaintiff bank could articulate its opposition to the contested branch of the defendant bank. The dissent viewed such a disposition of the case as being preferable to a *de novo* hearing in court as ordered by the majority. *First National Bank of Smithfield* v. *James J. Saxon, Comptroller of the Currency,* No. 9795 and *First National Bank of Smithfield* v. *First National Bank of Eastern North Carolina,* No. 9796 (4th Cir. 1965).[45]

In a reversal of another district court, the United States Court of Appeals for the Tenth Circuit held that the Comptroller exceeded his statutory authority in the issuance of a certificate authorizing a national bank to establish and maintain a branch bank in the same city in which its main office was located. This conclusion was based on the fact that under applicable state law a state bank could not establish a branch bank in this particular city unless it took over an existing bank which had been in operation previously for five years. The Court of Appeals, which reversed the judgment of the district court and remanded the case for a determination of the three affirmative defenses[46] raised by the defendant national bank, stated that location restrictions contained in state law with respect to branches inside the city in which the branching bank has its main office are applicable to the establishment of branches by a national bank in its home office city. *Walker Bank & Trust Company* v. *James J. Saxon, Comptroller of the Currency* and *The First National Bank of Logan,* Number 7981 (10th Cir. 1965).[47] In a case pending before the United States Court of Appeals for the District of Columbia Circuit, a district court reached a similar result. *Commercial Security Bank* v. *Saxon,* 236 F. Supp. 457 (D.C.D.C. 1964).[48]

The Comptroller's approval of the establishment of a new branch of a national bank was sustained in a recent decision of a Federal district court. The main office of the defendant bank was located at Fort Knox in Kentucky where applicable branching law permits national banks to establish branches anywhere in the county in which the bank is located. The plaintiff banks unsuccessfully contended that, since Fort Knox is a military reservation and Federal enclave ceded to the United States by the State of Kentucky, the national bank at Fort Knox was not legally within the State of Kentucky and therefore could not legally branch into the state. The court sustained the Comptroller's position

[45] Branch litigation that involves basically the same issues as are raised in this case was discussed in *The National Banking Review,* 3, September 1965, p. 119; 2, June 1965, p. 587; March 1965, pp. 435-436; December 1964, p. 271; September 1964, p. 101; 1, June 1964, p. 611; and December 1963, pp. 270-271.

[46] The three affirmative defenses included the plaintiff's lack of standing to sue, estoppel, and unconstitutionality of the state branching law.

[47] See *The National Banking Review,* 2, March 1965, p. 435, December 1964, pp. 272-273, and 1, September 1963, p. 144.

[48] Ibid.

that, inasmuch as the main office of the national bank was geographically located at Fort Knox and within the boundary lines of Hardin County, Kentucky, the bank could lawfully branch anywhere within Hardin County. *First Hardin National Bank and The Farmers Bank of Vine Grove, Kentucky* v. *Fort Knox National Bank,* C. A. No. 504 6 (D.C.W.D. Ky.).[49]

A national bank has recently filed suit against another national bank and the Comptroller of the Currency to restrain the issuance of a branch certificate to the defendant bank for a branch at or near a location with respect to which a branch application of the plaintiff bank was denied. The plaintiff contends, among other things, that the Comptroller's approval of the defendant bank's branch application is illegal and invalid inasmuch as the Comptroller did not hold hearings in connection with either of the branch applications. *Fairfield National Bank of Highland Springs, Virginia* v. *James J. Saxon, Comptroller of the Currency of the United States, et al,* Civil Action No. 4459 (D.C.E.D. Va.).

In another action, a state chartered bank and two shareholders of a national bank seek a judgment that the issuance of a *new national bank charter* was illegal and void. The plaintiffs contend that the issuance of the new bank charter was prohibited by and in violation of both Federal and Mississippi banking law and other provisions of Federal and Mississippi law, including the Federal Administrative Procedure Act. *Citizens Bank of Hattiesburg et al* v. *James J. Saxon,* Civil Action No. 1998 (D.C. S.D. Miss.).

A state supreme court recently held, in an action in which a competitor national bank sought to enjoin permanently the issuance by the Comptroller of a certificate by which a Morris Plan Bank would convert into a national bank, that a Morris Plan Bank is a state bank within the meaning of the New Hampshire bank conversion statute and therefore eligible for conversion to a national bank under 12 U.S.C. 35.[50] Among other factors, the state supreme court noted that the conversion statute manifested a clear legislative intent not to place any restrictions in the path of a state bank intending to convert into a national bank; that the Morris Plan Bank was empowered to loan money at interest, to take security therefor, both real and personal, and to issue interest-bearing certificates payable in installments. The court held that, by the powers granted to the bank by the state legislature, by the bank's method of operation, and by the manner in which it is treated and supervised by the state authorities, the Morris Plan Bank is a state bank within the terms of state law and that there was nothing in the record to support contentions that the conversion of the Morris Plan Bank to a national bank would be in contravention of any state or Federal law. *Amoskeag National Bank* v. *Manchester Morris Plan Bank,* Equity No. 5984 (N.H. 1965).

XXV. *Other Litigation*

A recent ruling of a Federal district court has held that a commercial bank was not guilty of an illegal restraint on competition or other *violation of the Sherman Antitrust Act* by contracting to perform computerized payroll accounting services for its customers. It was held

[49] This case was previously discussed in *The National Banking Review,* 3, September 1965, pp. 118-119.

[50] A conversion into a national bank is permitted under 12 U.S.C. 35, which provides that a state bank may not be converted into a national bank in contravention of state law. In this case, it was contended by the plaintiff bank that the Morris Plan Bank was not a bank under state law, and therefore, was not a state bank which could convert into a national bank under 12 U.S.C. 35. See *The National Banking Review* 2, December 1964, p. 271.

that the contracts by the bank with its customers to perform such payroll accounting services did not constitute a restraint of competition since the employees of the customers could easily withdraw or transfer their payroll payments. The court noted that in that each pay period each employee was given two free checks with which to withdraw his money from the defendant bank and deposit it with the bank of his choice or otherwise use it; that the employee could utilize a procedure suggested by one of the plaintiff banks whereby he could make arrangements for an automatic transfer of his funds from the defendant bank to any bank of his choice; and that there was no compulsion on the employees to maintain and use the special accounts set up by the defendant bank. *Bank of Utah* v. *Commercial Security Bank*, (D. C. Utah 1965).

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TABLE 1

Number of national banks and banking offices, by states, September 30, 1965

State	National banks			Number of branches of national banks	Number of national banking offices
	Total	Unit	With branches		
United States	4,811	3,499	1,312	8,562	13,373
Alabama	86	59	27	116	202
Alaska	5	0	5	38	43
Arizona	4	1	3	169	173
Arkansas	65	38	27	55	120
California	95	58	37	1,708	1,803
Colorado	117	117	0	0	117
Connecticut	28	11	17	163	191
Delaware	5	3	2	4	9
District of Columbia	8	0	8	46	54
Florida	193	193	0	0	193
Georgia	57	32	25	114	171
Hawaii	2	0	2	39	41
Idaho	9	3	6	92	101
Illinois	416	416	0	0	416
Indiana	124	61	63	251	375
Iowa	101	77	24	26	127
Kansas	170	147	23	23	193
Kentucky	81	40	41	116	197
Louisiana	47	17	30	128	175
Maine	21	7	14	67	88
Maryland	50	23	27	181	231
Massachusetts	94	31	63	316	410
Michigan	97	42	55	391	488
Minnesota	193	191	2	6	199
Mississippi	34	8	26	50	84
Missouri	96	78	18	18	114
Montana	49	49	0	0	49
Nebraska	125	108	17	17	142
Nevada	3	1	2	32	35
New Hampshire	50	32	18	22	72
New Jersey	148	53	95	409	557
New Mexico	34	15	19	51	85
New York	198	103	95	943	1,141
North Carolina	30	9	21	260	290
North Dakota	42	37	5	5	47
Ohio	224	98	126	504	728
Oklahoma	222	197	25	25	247
Oregon	12	7	5	204	216
Pennsylvania	375	228	147	763	1,138
Rhode Island	4	0	4	53	57
South Carolina	24	5	19	169	193
South Dakota	34	28	6	36	70
Tennessee	75	25	50	192	267
Texas	545*	545	0	0	545
Utah	13	9	4	54	67
Vermont	27	16	11	29	56
Virginia	119*	51	68	315	434
Washington	31	14	17	336	367
West Virginia	79	79	0	0	79
Wisconsin	110	98	12	24	134
Wyoming	39	39	0	0	39
Virgin Islands	1	0	1	2	3
D.C.—all †	15	1	14	81	96

* Includes one bank organized under Section 11 of the Federal Deposit Insurance Act.
† Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

TABLE 2

Total and principal assets of national banks, by states, October 13, 1965
(Dollar amounts in millions)

State	Number of banks	Assets								
		Total assets	Cash assets *	U. S. Government obligations, net	State and local securities, net	Other bonds, notes, net	Loans and discounts, net	Federal funds sold	Direct lease financing	Fixed assets
United States	4,810	$213,066	$ 36,084	$ 31,651	$ 22,283	$ 2,784	$111,349	$ 2,522	$ 235	$ 3,124
Alabama	86	2,465	431	481	288	28	1,154	30	—	40
Alaska	5	287	44	44	23	11	151	4	0	8
Arizona	4	1,604	213	165	124	17	1,022	2	—	37
Arkansas	65	1,106	224	161	132	15	535	15	—	17
California	96	27,633	3,907	3,476	2,743	286	15,811	400	104	452
Colorado	117	2,301	429	379	175	9	1,214	23	4	50
Connecticut	29	1,840	310	173	238	5	1,038	17	1	44
Delaware	5	27	4	8	—	1	12	1	0	1
District of Columbia	8	1,408	248	320	65	3	719	21	0	22
Florida	193	5,241	994	1,075	482	118	2,340	58	—	133
Georgia	57	2,837	573	339	208	36	1,570	30	3	52
Hawaii	2	394	38	65	38	5	226	3	1	13
Idaho	9	688	89	109	63	8	397	4	0	13
Illinois	416	19,258	3,492	3,272	2,104	394	9,369	156	33	133
Indiana	123	4,503	741	930	380	99	2,174	88	4	56
Iowa	101	1,595	357	312	134	29	700	35	—	20
Kansas	170	1,879	315	424	208	35	849	17	—	23
Kentucky	81	1,456	243	267	153	24	718	21	—	21
Louisiana	47	2,658	483	503	271	19	1,295	30	1	34
Maine	21	487	78	73	57	5	260	2	0	9
Maryland	50	2,050	392	338	165	32	1,049	37	3	23
Massachusetts	93	5,764	1,131	626	498	19	3,205	117	5	66
Michigan	97	8,196	1,158	1,416	926	47	4,444	20	6	94
Minnesota	193	4,376	826	739	404	88	2,203	15	2	62
Mississippi	35	931	154	156	113	6	449	23	0	22
Missouri	96	4,118	861	591	407	28	2,100	48	1	39
Montana	49	639	96	119	58	9	335	3	—	13
Nebraska	125	1,706	354	276	137	24	859	21	1	22
Nevada	3	497	67	71	51	18	241	25	0	18
New Hampshire	50	484	81	68	35	2	275	13	0	9
New Jersey	148	6,644	905	1,083	931	124	3,391	70	2	93
New Mexico	34	703	109	140	55	7	360	16	—	13
New York	198	32,802	5,910	3,113	3,598	347	17,814	476	33	403
North Carolina	30	1,928	416	208	185	36	1,010	19	0	33
North Dakota	42	558	71	126	58	14	270	2	—	12
Ohio	224	9,113	1,363	1,589	1,001	102	4,773	112	3	114
Oklahoma	222	3,198	632	604	284	55	1,520	32	1	52
Oregon	12	2,663	407	364	257	76	1,446	11	2	56
Pennsylvania	375	14,514	2,075	2,294	2,070	165	7,375	164	16	184
Rhode Island	4	782	80	63	168	4	448	6	0	8
South Carolina	24	995	199	170	66	25	492	16	0	19
South Dakota	33	629	90	147	47	10	315	2	0	12
Tennessee	75	3,790	757	596	358	30	1,933	43	0	52
Texas	545	13,956	2,792	2,098	1,343	223	6,899	157	—	317
Utah	13	716	101	75	100	3	421	3	1	10
Vermont	27	297	36	54	23	3	168	7	0	5
Virginia	118	3,259	474	497	322	47	1,811	34	1	56
Washington	31	3,605	596	530	332	28	1,962	49	2	62
West Virginia	79	1,054	168	304	94	13	440	13	1	17
Wisconsin	110	2,990	500	526	284	48	1,550	10	2	52
Wyoming	39	407	67	84	24	2	216	—	—	10
Virgin Islands	1	35	3	10	1	0	20	0	0	—
D.C.—all †	15	2,470	413	534	104	10	1,321	40	0	30

* Cash, balances with other banks, and cash items in process of collection.

† Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

Note: Data may not add to totals because of rounding. Dashes indicate amounts less than $500,000.

TABLE 3

Total and principal liabilities of national banks, by states, October 13, 1965
(Dollar amounts in millions)

State	Liabilities						
	Total liabilities	Total deposits	Demand deposits, total	Time and savings deposits, total	Demand deposits, IPC *	Time deposits, IPC	Federal funds purchased
United States	$195,676	$186,400	$102,234	$ 84,165	$ 77,285	$ 76,873	$ 2,076
Alabama	2,260	2,213	1,391	823	1,032	785	—
Alaska	271	267	149	118	119	75	0
Arizona	1,469	1,421	668	753	541	727	9
Arkansas	1,015	999	661	337	467	322	3
California	25,799	24,527	10,644	13,883	8,731	12,433	255
Colorado	2,118	2,056	1,147	909	922	830	25
Connecticut	1,689	1,595	998	597	881	535	17
Delaware	24	24	12	12	11	12	0
District of Columbia	1,303	1,267	829	437	743	426	16
Florida	4,808	4,668	2,803	1,865	2,111	1,637	23
Georgia	2,594	2,488	1,670	819	1,220	731	22
Hawaii	350	342	174	168	127	143	0
Idaho	638	625	354	271	289	271	—
Illinois	17,788	16,554	8,992	7,562	6,569	7,133	400
Indiana	4,145	3,926	2,284	1,642	1,802	1,522	116
Iowa	1,473	1,451	968	484	643	466	3
Kansas	1,703	1,669	1,107	561	779	529	12
Kentucky	1,322	1,303	858	445	716	422	—
Louisiana	2,424	2,359	1,581	778	1,165	687	21
Maine	442	420	242	178	201	175	10
Maryland	1,887	1,791	1,134	657	875	619	53
Massachusetts	5,244	4,881	3,424	1,457	2,547	1,368	86
Michigan	7,662	7,357	3,289	4,069	2,564	3,585	41
Minnesota	4,042	3,889	2,231	1,658	1,485	1,575	42
Mississippi	848	814	552	262	360	244	19
Missouri	3,753	3,606	2,389	1,217	1,623	1,114	64
Montana	595	575	307	268	252	251	3
Nebraska	1,560	1,529	1,061	468	738	461	4
Nevada	460	450	249	201	181	192	0
New Hampshire	438	411	281	130	234	116	2
New Jersey	6,144	5,898	3,032	2,867	2,484	2,773	35
New Mexico	649	637	392	245	306	208	—
New York	29,727	27,340	14,721	12,619	10,270	11,398	306
North Carolina	1,772	1,712	1,108	604	877	492	8
North Dakota	519	508	265	243	222	230	—
Ohio	8,356	8,059	4,220	3,839	3,263	3,619	51
Oklahoma	2,881	2,799	1,817	982	1,321	922	10
Oregon	2,477	2,406	1,135	1,271	979	1,122	1
Pennsylvania	13,182	12,674	6,203	6,471	4,885	5,914	140
Rhode Island	727	700	271	429	220	386	6
South Carolina	916	869	714	155	589	142	10
South Dakota	584	573	312	261	244	238	0
Tennessee	3,506	3,407	2,044	1,363	1,325	1,236	13
Texas	12,740	12,375	7,733	4,642	5,685	3,964	162
Utah	658	640	286	354	227	280	6
Vermont	272	266	104	162	89	160	0
Virginia	2,980	2,883	1,505	1,378	1,255	1,303	9
Washington	3,337	3,202	1,772	1,430	1,449	1,415	40
West Virginia	952	926	531	396	450	394	8
Wisconsin	2,766	2,653	1,416	1,237	1,111	1,127	22
Wyoming	369	361	193	168	146	153	0
Virgin Islands	32	31	9	22	7	12	0
D.C.—all †	2,292	2,217	1,427	790	1,305	777	20

* IPC deposits are those of individuals, partnerships, and corporations.

† Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

Note: Data may not add to totals because of rounding. Dashes indicate amounts less than $500,000.

TABLE 4

Capital accounts of national banks, by states, October 13, 1965
(Dollar amounts in millions)

State	Total capital accounts	Debentures	Preferred stock	Common stock	Surplus	Undivided profits	Reserves
United States	$ 17,390	$ 1,079	$ 30	$ 4,899	$ 7,841	$ 3,088	$ 454
Alabama	205	0	0	63	82	45	14
Alaska	16	—	0	5	4	6	1
Arizona	135	26	0	30	57	19	3
Arkansas	91	1	0	28	37	22	3
California	1,833	145	0	501	818	359	10
Colorado	184	3	0	60	79	41	1
Connecticut	151	—	0	44	82	24	1
Delaware	2	0	0	1	1	—	—
District of Columbia	105	0	0	29	54	22	—
Florida	433	16	—	166	178	60	13
Georgia	242	37	0	53	95	33	24
Hawaii	44	10	0	9	14	9	2
Idaho	49	0	0	17	24	8	1
Illinois	1,470	11	0	513	680	222	44
Indiana	358	13	0	86	172	79	8
Iowa	122	0	0	32	54	34	2
Kansas	176	—	1	51	78	45	2
Kentucky	133	0	0	31	65	34	3
Louisiana	234	—	3	53	131	46	1
Maine	45	0	0	17	15	12	1
Maryland	163	2	0	45	78	32	6
Massachusetts	520	10	0	144	278	79	8
Michigan	534	39	4	139	239	103	10
Minnesota	334	0	0	106	142	81	5
Mississippi	84	6	0	21	51	5	—
Missouri	365	25	0	102	151	79	7
Montana	45	0	0	16	17	12	—
Nebraska	146	0	0	41	60	42	3
Nevada	36	0	0	17	15	4	—
New Hampshire	46	0	0	9	23	12	2
New Jersey	500	27	—	140	231	92	10
New Mexico	54	0	0	19	19	8	8
New York	3,075	589	20	789	1,189	315	174
North Carolina	155	15	0	38	75	26	1
North Dakota	39	0	0	13	15	11	1
Ohio	757	24	—	208	383	137	4
Oklahoma	317	18	—	85	120	91	4
Oregon	187	0	0	60	67	59	—
Pennsylvania	1,332	22	1	297	746	252	15
Rhode Island	55	0	0	14	30	11	0
South Carolina	79	0	—	19	44	15	1
South Dakota	45	—	0	15	19	10	—
Tennessee	284	—	—	74	144	59	7
Texas	1,216	37	0	411	515	221	32
Utah	58	0	0	19	30	8	1
Vermont	25	—	1	7	10	6	1
Virginia	279	—	0	84	142	51	1
Washington	267	0	0	79	118	70	2
West Virginia	102	0	0	24	49	24	5
Wisconsin	224	1	0	74	100	41	8
Wyoming	37	1	0	6	19	11	1
Virgin Islands	2	0	0	—	1	1	0
D.C.—all †	178	0	0	44	96	35	3

† Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

Note: Data may not add to totals because of rounding. Dashes indicate amounts less than $500,000.

TABLE 5

Status of applications for national bank charters, and charters issued, July 1-September 30, 1965

Applications carried over from June 30, 1965	28
1 Conversions	
27 Primary	
Applications received July 1—September 30, 1965	23
9 Conversions	
14 Primary	
	51
Applications approved July 1—September 30, 1965	13
8 Conversions	
5 Primary	
Applications rejected July 1—September 30, 1965	9
0 Conversions	
9 Primary	
Applications abandoned July 1—September 30, 1965	0
0 Conversions	
0 Primary	
Applications pending as of September 30, 1965	29
2 Conversions	
27 Primary	
	51
* * * * * *	
National banks chartered July 1—September 30, 1965	20
5 Conversions	
15 Primary	

TABLE 6

Status of applications for national bank charters,* and charters issued,* by states, July 1-September 30, 1965

State	Received †	Approved	Rejected	Abandoned	Pending Sept. 30, 1965	Charters issued
United States	51	13	9	0	29	20
Alabama	0	0	0	0	0	2
Alaska	0	0	0	0	0	0
Arizona	0	0	0	0	0	0
Arkansas	3	0	0	0	3	0
California	1	0	0	0	1	2
Colorado	0	0	0	0	0	0
Connecticut	0	0	0	0	0	1
Delaware	0	0	0	0	0	0
District of Columbia	0	0	0	0	0	0
Florida	4	0	1	0	3	1
Georgia	4	2	1	0	1	3
Hawaii	0	0	0	0	0	0
Idaho	0	0	0	0	0	0
Illinois	2	1	0	0	1	1
Indiana	0	0	0	0	0	0
Iowa	2	0	0	0	2	0
Kansas	0	0	0	0	0	0
Kentucky	0	0	0	0	0	0
Louisiana	1	0	0	0	1	0
Maine	0	0	0	0	0	0
Maryland	1	0	0	0	1	0
Massachusetts	1	0	0	0	1	0
Michigan	0	0	0	0	0	0
Minnesota	1	0	0	0	1	0
Mississippi	5	2	1	0	2	1
Missouri	1	0	0	0	1	0
Montana	1	0	0	0	1	1
Nebraska	0	0	0	0	0	0
Nevada	0	0	0	0	0	0
New Hampshire	1	1	0	0	0	0
New Jersey	2	0	1	0	1	1
New Mexico	0	0	0	0	0	0
New York	2	1	0	0	1	1
North Carolina	1	0	0	0	1	0
North Dakota	0	0	0	0	0	0
Ohio	2	0	2	0	0	1
Oklahoma	1	0	1	0	0	0
Oregon	1	1	0	0	0	0
Pennsylvania	1	0	0	0	1	0
Rhode Island	0	0	0	0	0	0
South Carolina	1	1	0	0	0	0
South Dakota	1	1	0	0	0	1
Tennessee	1	1	0	0	0	0
Texas	2	0	0	0	2	2
Utah	0	0	0	0	0	0
Vermont	0	0	0	0	0	0
Virginia	0	0	0	0	0	1
Washington	2	0	2	0	0	1
West Virginia	1	0	0	0	1	0
Wisconsin	4	2	0	0	2	0
Wyoming	0	0	0	0	0	0
Virgin Islands	0	0	0	0	0	0
Guam	1	0	0	0	1	0

* Includes conversions.
† Includes applications pending as of June 30, 1965.

TABLE 7

Status of de novo branch applications of national banks, by states, July 1- September 30, 1965

State	Received *	Approved	Rejected	Abandoned	Pending Sept. 30, 1965
United States	421	188	38	8	187
Alabama	3	0	0	1	2
Alaska	3	1	2	0	0
Arizona	5	4	0	0	1
Arkansas	5	2	2	0	1
California	66	29	11	1	25
Colorado	0	0	0	0	0
Connecticut	5	2	0	0	3
Delaware	0	0	0	0	0
District of Columbia	6	1	0	1	4
Florida	0	0	0	0	0
Georgia	7	5	0	0	2
Hawaii	0	0	0	0	0
Idaho	10	4	3	0	3
Illinois	0	0	0	0	0
Indiana	14	7	0	1	6
Iowa	4	3	0	0	1
Kansas	1	1	0	0	0
Kentucky	4	1	0	0	3
Louisiana	5	3	0	0	2
Maine	1	0	0	0	1
Maryland	14	5	0	1	8
Massachusetts	14	7	0	0	7
Michigan	30	9	3	0	18
Minnesota	0	0	0	0	0
Mississippi	10	7	1	1	1
Missouri	1	1	0	0	0
Montana	0	0	0	0	0
Nebraska	0	0	0	0	0
Nevada	1	0	0	0	1
New Hampshire	0	0	0	0	0
New Jersey	14	3	0	0	11
New Mexico	3	2	1	0	0
New York	55	26	2	1	26
North Carolina	14	5	0	0	9
North Dakota	1	0	0	0	1
Ohio	24	16	3	0	5
Oklahoma	1	0	0	0	1
Oregon	5	3	1	0	1
Pennsylvania	20	8	1	0	11
Rhode Island	0	0	0	0	0
South Carolina	11	4	1	1	5
South Dakota	2	2	0	0	0
Tennessee	13	9	0	0	4
Texas	0	0	0	0	0
Utah	2	0	0	0	2
Vermont	1	1	0	0	0
Virginia	28	16	4	0	8
Washington	7	1	3	0	3
West Virginia	0	0	0	0	0
Wisconsin	11	0	0	0	11
Wyoming	0	0	0	0	0
Virgin Islands	0	0	0	0	0
D.C.—all †	10	3	2	1	4

* Includes applications pending as of June 30, 1965.

† Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

TABLE 8

Branches of national banks: in operation June 30, 1965; opened, discontinued, or consolidated, July 1-September 30, 1965; and branches in operation September 30, 1965

State	Branches in operation June 30, 1965	Branches opened for business July 1-Sept. 30, 1965	Existing branches discontinued or consolidated July 1-Sept. 30, 1965	Branches in operation Sept. 30, 1965
United States	8,254	320*	12	8,562
Alabama	110	6	0	116
Alaska	38	0	0	38
Arizona	168	1	0	169
Arkansas	53	2	0	55
California	1,681	28	1	1,708
Colorado	0	0	0	0
Connecticut	158	5	0	163
Delaware	4	0	0	4
District of Columbia	46	0	0	46
Florida	0	0	0	0
Georgia	103	11	0	114
Hawaii	39	0	0	39
Idaho	91	1	0	92
Illinois	0	0	0	0
Indiana	247	4	0	251
Iowa	24	4	2	26
Kansas	24	0	1	23
Kentucky	117	0	1	116
Louisiana	127	1	0	128
Maine	65	2	0	67
Maryland	177	5	1	181
Massachusetts	312	7	3	316
Michigan	377	14	0	391
Minnesota	6	0	0	6
Mississippi	48	2	0	50
Missouri	14	4	0	18
Montana	0	0	0	0
Nebraska	17	0	0	17
Nevada	32	0	0	32
New Hampshire	22	0	0	22
New Jersey	406	3	0	409
New Mexico	49	3	1	51
New York	792	152†	1	943
North Carolina	256	4	0	260
North Dakota	5	0	0	5
Ohio	489	15	0	504
Oklahoma	25	0	0	25
Oregon	203	1	0	204
Pennsylvania	752	11	0	763
Rhode Island	53	0	0	53
South Carolina	168	2	1	169
South Dakota	35	1	0	36
Tennessee	185	7	0	192
Texas	0	0	0	0
Utah	54	0	0	54
Vermont	27	2	0	29
Virginia	299	16	0	315
Washington	330	6	0	336
West Virginia	0	0	0	0
Wisconsin	24	0	0	24
Wyoming	0	0	0	0
Virgin Islands	2	0	0	2
D.C.—all‡	81	0	0	81

* Includes 152 de novo branches, 146 branches of newly converted banks and 22 branches acquired through merger.
† Includes 16 de novo branches and 136 branches of newly converted banks.
‡ Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

TABLE 9

Branches of national banks opened for business, by community size and size of bank, July 1-September 30, 1965

Category	July 1-September 30, 1965
In cities with population:	
Less than 5,000	42
5,000 to 24,999	70
25,000 to 49,999	21
50,000 to 99,999	16
100,000 to 249,999	10
250,000 to 499,999	10
500,000 to 1,000,000	19
Over 1,000,000	132
TOTAL	320*
By banks with total resources (In millions of dollars)	
Less than $ 10.0	33
10.0 to 24.9	24
25.0 to 49.9	11
50.0 to 99.9	19
100.0 to 999.9	64
Over 1,000	169
TOTAL	320*

* Includes 152 **de novo** branches, 146 branches of newly converted banks and 22 branches acquired through merger.

TABLE 10

Mergers,* July 1-September 30, 1965

Applications carried over from June 30, 1965	11
Applications received July 1—September 30, 1965	16
Disposition of applications: July 1—September 30, 1965	
Approved	15
Disapproved	0
Withdrawn	1
Pending September 30, 1965	11
Transactions completed—Total	16
Mergers	13
Consolidations	0
Purchase of assets	3

The aggregate total of capital stock and capital accounts for certificates issued are as follows:

	Charter or purchasing bank	Merg. consol. or selling bank	Combined
Capital stock	$204,340,242	$ 7,249,246	$208,619,792
Capital accounts	475,998,234	25,118,443	488,225,163

* Includes mergers, consolidations, and purchase and sale transactions where the resulting bank is a national bank.

BOOK REVIEWS

Financing Real Estate: Principles and Practices. By SHERMAN J. MAISEL. New York: McGraw Hill, 1965. Pp. + 432. $9.50.

This is a "how to" book that "presents the necessary background and techniques for making sound decisions in the financing of real estate." Good books of this type are rare; those with the inclination to write one usually do not have the qualifications, and vice versa. The author of this one, recently appointed by the Board of Governors of the Federal Reserve System, has exceptionally strong qualifications, and he makes a real contribution in a rather barren field. In view of the author's demonstrated talents, however, I was somewhat disappointed not to find more analytical "meat." This deficiency is, of course, partly a reflection of the skimpiness of the professional literature in the field. Much of what Maisel presents on lending practices and techniques he has evidently garnered on his own "from a variety of ably managed firms of both investors and lenders."

The book is written in an easy style that generally reflects the author's mastery of his materials. The closely packed early chapters, however, where Maisel attempts to give his (presumably nonprofessional) reader a broad background of the "environment and institutions within which real estate financing occurs," have a raw, unedited flavor about them. For example, the essentials of the relationship between bank reserves, deposits, and bank credit are not easy to convey in two sentences, but Maisel's version could hardly be more confusing: "The commercial bank that loses reserves must now curtail its loans or sell investments. For each $1 lost, it must contract its deposits by the $5 necessary to bring its reserve-deposit ratio back to the legal requirement" (p. 76). Does the statement that free reserves are the "opposite" of discounting by member banks (p. 77) convey any information to the person who did not know before what free reserves were? Granted that debt management should play only a small role in credit controls, is this because "the problems of related alterations in the proportions of the debt are difficult" (p. 87)? On page 83 Maisel refers to "security prices" when he means interest rates.

Practitioners will probably give their main attention to Chapters 6-11, which focus on the techniques and concepts involved in lending decisions. Here Maisel discusses the analysis and control of risk, profit planning, and portfolio management. I suspect that many practitioners will find these chapters an eye opener, even though in some cases Maisel does little more than provide check lists of relevant items and a discussion of why they are relevant. A check list can be extremely useful if you do not have one. It is not clear why citations are often omitted, (as on pages 122, 139, 191, 193, 241).

Chapters 12-16 are a mixed bag but include a good deal of material of interest to economists. Chapter 12 discusses the financing of single family homes, mainly from the point of view of the borrower rather than the lender. Chapter 12 contains material on the short construction cycle drawn from an article by Maisel in the *American Economic Review,* and a lucid discussion of technical aspects of the construction financing process which I found extremely interesting and useful. The last three chapters focus on income-producing (as opposed to residential) properties, and consider techniques of investment analysis and methods of financing employed in this largely uncharted market. Despite the growing importance of this market, we lack the most rudimentary facts regarding industry practices, dollar flows, and transaction terms in it. Although Maisel is not able to provide new statistics, he makes a real contribution toward narrowing the "institutional facts gap." He discusses all the major financing devices with considerable emphasis on those that have come strongly into public consciousness in recent years, including syndicates, real estate investment trusts, and cooperatives. His discussion of lender and investor practices deftly sorts out basic features common to income properties of all types, and the special features associ-

ated with each of the wide variety of such properties. These chapters represent a useful springboard for studies of this important market now underway at the National Bureau of Economic Research and elsewhere, which hopefully will quantify some of the principal features of the map Maisel has sketched.

JACK M. GUTTENTAG

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Banking Market Structure and Performance in Metropolitan Areas: A Statistical Study of Factors Affecting Rates on Bank Loans. By THEODORE G. FLECHSIG. Washington, D.C.: Board of Governors of the Federal Reserve System, 1965. Pp. ix + 73. $0.50.

This monograph tests the all-to-casually accepted thesis that concentration of commercial bank deposits is "significantly related to one indicator of market power of monopoly: the interest rates charged on business loans" (p. 2). A summary version of the study appears in the May 1965 issue of *The Journal of Finance.*

Applying multiple regression techniques to Federal Reserve data from the Survey of Bank Rates on Short-Term Business Loans for June 1960 and the Business Loan Survey of 1955, Flechsig concludes that:

> (1) differences in the supply and demand conditions in local or regional markets and differences in loan characteristics are important explanations of variations in rates on short-term business loans, and (2) . . . there is no significant association between rates and the degree of deposit concentration in each area when the foregoing differences are taken into account (p. 7).

Of particular importance is the fact that these findings apply in equal measure to the smallest size class of borrower. It is these borrowers who, because of being restricted in the quest for financing to the local market, are possibly most subject to noncompetitive pricing practices by commercial banks.

Correlating loan rates from the June 1960 Survey with concentration ratios—measured for each market by the ratio of total deposits held by the three largest commercial banks to the deposits of all commercial banks—Flechsig found the correlation coefficients for the two smallest size-of-loan categories ($1,000 to $10,000 and $10,000 to $100,000) to be significant at the 5 percent level. Not unexpectedly, the relationship appears insignificant for larger size loans. Significant simple correlations with loan rates were also obtained for two other variables—average size of loan (in each size-of-loan category) by (1) bank, and (2) region. The partial effects on loan rates of these three variables were then considered together, using multiple regression analysis. Here only average size of loan and region appear as statistically significant explanatory variables; for all size classes of loans for which regressions were run, the degree of concentration appeared insignificant, with the standard error in all cases exceeding the value of the parameter.

Attempting to improve his results, Flechsig introduced variables reflecting local differences in the supply of and demand for bank funds. The explained variance in rates was about 10 percentage points greater than in the regressions in which only the regional variable was considered. "This suggests that an important part of the effects on rates of local market factors was not adequately accounted for by the regional variables" (p. 38). It might be noted that, in this reviewer's opinion, the exposition in the section where Flechsig introduces underlying regional variables and variables accounting for local supply and demand conditions leaves something to be desired. In any event, concentration again proved insignificant in explaining variation in interest rates charged on short-term business loans.

Statistical consideration of data from the 1955 Business Loan Survey yielded similar results to those stated above. Here again, for the two smallest asset-size-of-borrower categories, concentration evidenced no significance as an explanatory variable, with the standard error in all cases equaling or exceeding the concentration coefficient.

Flechsig's findings conflict with a major thesis of a recent and similar investigation

by Franklin R. Edwards.[1] In his study, Edwards sought to test the hypothesis "that, *ceteris paribus,* the level of business loan rates is higher in markets having relatively high concentration."[2] Basing much of his research on the 1955 Business Loan Survey data, Edwards concluded that for the smallest borrower-size category "a twenty percent increase in concentration raises loan rates, on the average, by 36 basis points," and that such an increase "constitutes 27.5 percent of the range in rates in 1955 . . . and is a rise of 7.3 percent in the average rate in 1955." Edwards did find, as had Flechsig in his two-variable correlations between interest rates and concentration, that "regressions on different sizes of borrower indicate that as the size of borrower increases, the effect on loan rates diminishes.[3]

Of the two, Flechsig's conclusions strike this reviewer as being the better founded. He notes of Edward's study that a significant correlation (at the 1 percent level) exists between concentration and region. This, Flechsig finds, results from the inclusion of mutual savings bank deposits in Edward's derivation of concentration ratios. Thus Flechsig correctly concludes that Edwards could not determine statistically whether it was concentration or region that is associated with short-term business loan rates. Eliminating the effect of mutual savings banks on his concentration ratios, Flechsig finds no significant relationship (at the 5 percent level) between concentration and region. His own regression estimates are, therefore, not as subject to the multicollinearity problems found in the regressions run by Edwards. Again, Flechsig seems to have been somewhat wiser in selecting loan rates, from the 1955 Survey, on a relatively more homogeneous product—short-term business loans granted within a specified time interval. Edwards had used data on business loans outstanding on a particular date, irrespective of maturity or the date on which the loan was made; this shortcoming was compensated for only in part by including as an independent variable the percentage of total loans to borrowers of a given size class with maturities of less than a year.

All in all, Flechsig has done a valuable piece of research, and has presented a study that is both well planned and well executed. Most important—and independent of its validity—it should cause practioners in the field of banking regulation to pause before casually, if not unthinkingly, grinding out and basing decisions upon concentration ratios.

MARTIN R. BLYN

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Views expressed here are not necessarily those of the Federal Reserve Bank of Cleveland.

Populists, Plungers, and Progressives: A Social History of Stock and Commodity Speculation, 1890-1936. By CEDRIC B. COWING. Princeton, N.J.: Princeton University Press, 1965. Pp. viii + 299. $6.50.

Mr. Cowing's book, as its subtitle implies, traces out the controversy over speculation on the exchanges from the zenith of the Populist movement to the first years of the New Deal. In his discussion of this minor strand in the tapestry of reform, the author presents further evidence of the intricate intertwining of Populist woof with Progressive warp.

In essence, Mr. Cowing utilizes the now orthodox approach of Sir Lewis Namier, so that by assiduous culling of the sources he can establish the voting patterns of the anti-speculator tier of states. The method yields an interesting example of the historical continuum of Populist and Progressive sentiment, for we observe the cross-fertilization which, in turn, influenced the New Deal.

Rabid Populist hostility to trading in grain futures originated, as one might suspect, in

[1] Franklin R. Edwards, "Concentration in Banking and Its Effect on Business Loan Rates," *Review of Economics and Statistics,* August 1964; and *Concentration and Competition in Commercial Banking: A Statistical Study,* published as Research Report No. 26 by the Federal Reserve Bank of Boston.

[2] Franklin R. Edwards, "Concentration in Banking," p. 294.

[3] *Ibid.,* p. 297.

the great producer states stretching from the Missouri to the Rockies. The futures system incurred farmers' wrath following the wide price movements on the Chicago and New York exchanges after the Civil War; their anger, exacerbated by the relative decline in agriculture's economic position and the frightening droughts of the 1880's, led to Congressional action to reduce trading in futures. Farming hostility was particularly centered on the fact of commodity sales being several times annual production, which carried the implicit charge of an inequitable division of sales proceeds between speculative broker and virtuous grower.

Ironically, the only major legislation the antispeculator tier carried in both houses was the Hatch-Washington Bill, passed in 1892, which never became law because of exigencies of the Congressional calendar. Voting on this measure, which would have taxed futures contracts by 10 percent, established the sectional division on the speculative issue that lasted until the coming of the New Deal.

Throughout the following generation, the agrarian antispeculator states consistently voted together on a wide spectrum of legislation—from bucket shop taxation to limitation of branch banking—but the often unanimous opposition of Eastern Senators made reform impossible until New Deal statutes aimed at tightening controls over banking and the stock exchanges were instituted. With the exception of their legislative achievements during the 1930's, the agrarian states were remarkably unsuccessful in their crusading efforts. Mr. Cowing attributes this failure partly to public apathy in the face of sustained prosperity, perhaps more to the fractured sectionalism of other state blocs. Lack of solidarity in other geographical regions was a direct result of the Progressives' Procrustean dilemma—their flanks wished to support both the agrarians *and* the country bankers, and their efforts were neutralized by this inconsistency. Progressive ambivalence toward these questions was only resolved by the 1929 catastrophe.

Mr. Cowing relies heavily on such contemporary sources as *The Commercial & Financial Chronicle, Collier's, The Saturday Evening Post, Financial World, Literary Digest,* and *The Wall Street Journal.* It is regrettable that these sources have been used in an overwhelmingly descriptive fashion, when distinguished current writing concerning this period has accustomed us to a more analytical style.

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The International Monetary Fund: Its Form and Functions. By J. MARCUS FLEMING. Washington, D.C.: International Monetary Fund, 1964. Pp. v + 57. Free.

The International Monetary Fund is probably the least understood of all the major international organizations. This book published by the I.M.F. is part of the informal and much needed campaign undertaken by the present Managing Director of the Fund, Dr. Paul Pierre Schweitzer, better to acquaint the public with the role and functions of the I.M.F.

The author, Dr. Fleming, is eminently qualified, both by reason of his long association with the Fund and his exceptional literary talents, to undertake the job of explaining the Fund to the intelligent individual who wishes more than a superficial understanding of the policies and operations of the Fund. This little book, consisting of two lectures originally given in Pakistan in 1964, comprises the most readable and authoritative description of the Fund's objectives, policies, operations, and activities available in a single work.

The author translates that strange language of the Fund which deals in purchases, repurchases and tranches (gold and credit) into a form which may be understood by government officials, bankers and laymen who are not directly concerned with these matters on a daily basis. An interesting innovation is the presentation of the Fund balance sheet in the format of an ordinary bank balance sheet, which I am sure, for many people, will make that mysterious document intelligible for the first time. Fleming's book complements the excellent article written by another long-time Fund

editor now retired, Allan G. B. Fisher,[1] which describes the actual manner and ambience in which Fund negotiations are conducted and decisions made. The two works together provide the reader with a realistic up-to-date view of what the Fund is and how it operates.

Some of the most interesting parts of Fleming's work are the sections describing the institutional role of the I.M.F. in maintaining the present system of world trade and payments. The Fund was conceived as one of a pair of twins. However, the identical twin, the International Trade Organization, was stillborn, and the fraternal twin, the GATT, was born a cripple, with the result that the Fund and the GATT together do not have a comprehensive, contiguous jurisdiction covering the field of trade and payments. This situation has been aggravated by the persistently narrow view that the Fund has taken of its jurisdictions, in marked contrast to its liberal interpretation of the operations in which it may engage.

The Fund has distinguished sharply between restrictions placed on transactions, and restrictions placed on payments, so that in certain cases countries have been able to avoid the jurisdiction of the Fund by a change in the legal form of a restriction without any change in its intent. To the extent that trade and payment restrictions are substitutes for one another, and the GATT remains a weak institution, there is a persistent weakness in the policing of the present system of international trade and payments. Some of these deficiencies, insofar as they concern only Europe and North America, have been remedied by the work of the OECD, which has taken a less legalistic approach in dealing with trade and payment restrictions and has concerned itself with intent and effect rather than form. However, many less developed countries find that in many areas they have no forum in which to present their trade and payments problems except the United Nations itself. It still remains to be seen whether the newly formed U.N. Conference on Trade and Development will remedy this state of affairs.

Dr. Fleming attempts to demonstrate how flexible the Fund has been in adapting to changing world conditions. An objective observer, however, might conclude that the present decline in the influence of the Fund, which is reflected in the multiplication of international monetary arrangements and discussions of international monetary problems in organizations outside of the Fund, is the result of the Fund's failure to adapt rapidly enough to the political and economic implications of the European recovery and return to convertibility that occurred after 1958.

The manner in which the changes in the Fund's rules and operations did occur are frankly described by Fleming, and have been the subject of some controversy. The method chosen (and in this the American position carried a great deal of weight) was one of "interpretation" of the I.M.F.'s Articles of Agreement, rather than that of outright amendment as several executive directors of the Fund favored. This method of adaptation was employed even when the "interpretations" arrived at seemed strained and opposed to the explicit intent of the Articles of Agreement, as in the case of the rulings dealing with capital movements, and once led a French executive director of the Fund to throw up his hands and exclaim that if this process were to continue, the Bretton Woods Agreement would lose all substantive content and could be "interpreted" to mean anything at all. One of the important tasks of an international monetary conference will be to codify the existing "interpretations" and amend the Fund Agreement to provide a more flexible institutional framework for the future.

Fleming's prognostications and preferences for the future role of the Fund all appear to be extremely sound, and to the extent that they reflect current views within the Fund, forebode changes which, in this writer's opinion, are in a desirable direction. Fleming believes that the Fund furnishes the most promising means for providing for the needs of world liquidity. He suggests two ways in which this may be accomplished: (1) by extending the quasi-automatic drawing facilities (the so-called gold tranche), and possibly by relaxing the poli-

[1] "The Political Framework of an International Institution," *Manchester School of Economics and Social Studies*, Vol. 30, May 1962, pp. 121-151.

cies on repurchases within the automatic tranches; and (2) by developing the Fund's powers and practices in the sphere of investment, as distinct from the extension of countries' drawing facilities.

How important a role the Fund will play in the extension of international monetary cooperation, will depend upon how successful the Fund is in changing its institutional structure to deal with the political and economic problems of today and the future. The most important of these changes, as Fleming indicates, are of a political, rather than a technical, nature, and require a realignment of the balance of power within the I.M.F. to reflect the larger role and responsibility that Europe has today in the maintenance of monetary stability within the framework of a growing world economy.

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The Money Market and Monetary Management. By G. WALTER WOODWORTH. New York: Harper and Row Publishers, Inc., 1965. Pp. xii + 496. $8.50.

Professor Woodworth has written this book because he believes there is a lack of suitable teaching materials on the money market. The available literature tends to be either too general and fragmentary or too detailed and technical. He also believes that there is a tendency in many books to undertake an analysis and evaluation of monetary-fiscal policy without adequately preparing the student with the necessary technical money market background. Accordingly, this text has two objectives: In Part I, it presents the factual background and institutional setting of our money markets; in Part II, it draws on this background to discuss the problems of monetary-fiscal policy. Woodworth's expressed desire is to integrate the institutional and technical money market aspects with the broader social issues of stabilization policy; for this reason, he does not devote too much attention to the long-term capital markets in Part I, but concentrates, instead, mainly on the short-term money markets because they are more directly affected by Federal Reserve actions. The author's desire to integrate these two areas in this volume has a more important, though perhaps less obvious, consequence: It causes him to be more descriptive and less analytical than is probably desirable.

In Part I of the book the author explains, in some detail, the various short-term markets dealing in Federal funds, commercial paper, bankers' acceptances, bankers' certificates of deposits, brokers' loans and other market instruments. In addition, the author also includes chapters on the United States government security market and Federal agency securities. Woodworth presents an excellent description of the different money market instruments, their role and function in the real economy, their quantitative importance, and, in addition, provides illuminating and stimulating insights into the many institutional changes that have been, and are constantly, occurring. These chapters are well written. The material is ably presented and it should therefore prove useful to many students. Also included in this section are chapters on the "rate of interest" and on the "term structure of interest rates." The chapter on the rate of interest suffers somewhat because there is a failure to distinguish between lending and borrowing on the one hand and saving-investment on the other, while the chapter on term structure fails to bring in any of the recent theoretical and econometric work by Conard, Culbertson, Meiselman, Kessel, and Wood.

Part II of the book is devoted to monetary, fiscal, and debt management policy. Woodworth begins this section with a chapter on the objectives or goals of stabilization policy. This is followed by four chapters devoted to the instruments, or techniques, of monetary policy which take up in turn the discount mechanism, open-market operations, reserve requirement changes and selective controls. Two chapters follow which consider the monetary aspects of fiscal policy and debt management policy, and a chapter on the problem of coordinating monetary, fiscal, and debt management policy. With this background, Woodworth then reviews our monetary-fiscal-debt management experience for the following four periods: 1914-1941, 1942-1951, 1952-1958, and 1958-1963.

The material in Part II will provide the

student with a good factual and historical background of our stabilization policies and some discussion of the issues. It suffers from the fact that the discussion is somewhat elementary, concentrates too much on historical narrative and description, and tends consequently to neglect the theoretical issues. Woodworth is obviously quite knowledgeable concerning both the monetary mechanism and our monetary-fiscal policies, and the reader can readily accept most of what he says. And while it is clear that the author is familiar with the analytical literature on stabilization policies, his discussion is not sufficiently challenging and may not stimulate the student to further analysis. In fairness to Woodworth, it should be mentioned that his objective is to integrate the money market material with the discussion of stabilization policy. This almost inevitably tends to make him emphasize the descriptive aspects to the neglect of the theoretical macro-economic aspects. While I would readily agree with him that there is a need for an exposition of the money markets such as he presents in Part I, I would nevertheless question whether this is a desirable platform on which to develop a cogent analysis of monetary-fiscal policy.

Woodworth has done a commendable job in presenting the institutional aspects of the money markets in Part I, and in providing a historical review of monetary-fiscal-debt management policy in Part II. His detailed exposition of the various short-term money markets should prove to be extremely useful to many students, as will many of the chapters in Part II. For these reasons, the book may fill an important gap. But in spite of these virtues the book does not, in my opinion, go far enough for an advanced course in monetary-fiscal policy. It seems to me that the material presented is best viewed as a supplement to the money-banking material in a principles course; or if it is to be used in an advanced course, it should be supplemented by materials stressing the theoretical aspects of stabilization policy and their macroeconomic foundations.

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Foreign Enterprise in Colombia—Laws and Policies. By SEYMOUR W. WURFEL. Chapel Hill: The University of North Carolina Press, 1965. Pp. xv + 563. $10.00.

In this study carried out under a research fellowship granted by the American Society of International Law, Professor Wurfel of the faculty of law of the University of North Carolina has undertaken to set forth the legal environment for foreign investment in Colombia, in the context of that country's political, economic, and social conditions. It does much more than summarize the appropriate laws governing business organizations, and especially foreign enterprises. It is in fact the best introduction to the business climate in Colombia that has been written, and without doubt will be widely used by business, governments, and international agencies to acquaint personnel newly assigned to Colombia with the salient features of the society.

It is written with a sympathetic understanding of the country's history, problems, and its present leadership. If it suffers from an excessively laudatory appraisal of President Valencia's administration and the bipartisan National Front (a system whereby the presidency alternates between the Conservative and Liberal parties with elective and appointed administrative positions distributed equally to both), it is not without strong criticism of the excessive protectionism, misdirected efforts to control prices, the neglect of public education, legislative irresponsibility, and the scandalous lack of law enforcement. None of these, in the author's opinion, is sufficient to preclude advantageous investments by foreign businessmen.

The book is divided into three sections. The first treats the historical, geographical, and social framework, and includes an excellent summary of economic and political conditions. Colombia is a large country, larger than Texas and California combined, with a population of over 15,000,000. The vast majority of Colombians are ill-housed, ill-fed and ill-clothed. The housing problem is acute, as large numbers of the rural population have moved to the cities, aggravating an already serious amount of urban unemployment. Until fairly recently, overland communications were incredibly bad, and

continue to be poor. The railway, uniting Bogota with its chief Atlantic port, Santa Marta, was not completed until 1961. Notwithstanding the great need to improve the highway system, gasoline is barely taxed, roads are in disrepair, and vast sections of the country remain practically inaccessible.

Although Bogota prides itself on its high level of culture, the Catholic Church and private schools provide nearly all of the secondary educational facilities. About 1.3 percent of those who begin grammar school complete their secondary education; about 40 percent in the age group 7-14 are attending school. The national government with U.S. aid has made an increasing effort in recent years to correct this vast national deficiency. Schools providing technical training have been established.

In spite of drastic measures to restrict imports, Colombia faces a chronic deficiency in its balance of payments, which for a decade has brought pressure on the peso resulting in successive devaluations. Coffee is the chief foreign exchange earner, accounting for 70 percent of exports in 1963. The heavy reliance on a single crop has not diminished much in spite of official recognition of the need to develop additional sources of foreign exchange.

Mineral resources although plentiful are often inaccessible, and exploitation costly. Petroleum resources are being exploited at an increasing rate and provide a surplus for export accounting for 18 percent of exports in 1963. The coal and iron ore resources, although not of first quality, are being exploited through the government-sponsored Paz del Rio enterprise. With international help, the plant is being modernized and expanded and will supply a substantial portion of domestic needs. Gold, platinum, and emeralds are being exploited, but are of diminishing relative importance.

Fiscal irresponsibility, especially financing deficits through the central bank, has promoted inflation and aggravated price instability. The devaluation of 1962 was unaccompanied by appropriate domestic policies and the free rate of the peso, once again, is nearly double the official rate. Sometimes through its interventions to fix domestic prices, the government has sacrificed exports to domestic consumption, as in the case of sugar.

Nevertheless, the government has much to its credit with respect to creating an investment climate. The second section deals with the steps the government has taken to speed economic development. Numerous development institutions have been created, social overhead projects have been brought to fruition, and incentives to export afforded. Banking, financial, and other investment institutions have developed and expanded to meet urgent capital requirements, but inflation continues to hamper voluntary savings. Semi-autonomous government institutions have been developed on an *ad hoc* basis to provide technical and financing needs in certain areas.

A fair degree of political stability has been achieved in spite of increasing pressure on the National Front from the left and right. Prof. Wurfel's confidence in the political stability of the regime may have been shaken by events since he completed his book. Bogota has become an armed camp as citizens have armed to protect themselves from burglaries, kidnapping, and other calamities they fear in prospect. Gen. Ruiz Novoa, who is praised in the book for keeping the army out of politics, was removed for fears of his political ambitions. The presidential succession has been complicated by the withdrawal by Carlos Lleras Restrepo of his candidacy. The violence in Colombia, which is estimated to have slaughtered a half million Colombians since 1948, has diminished but has taken on aspects of guerrilla, i.e., political, warfare.

The description of the legal system, the laws governing business organizations, labor relations, and taxes in the third section of the book more than adequately informs the prospective investor of the legal environment. What it may not prepare him for are the numerous delays which he may encounter. Yet Prof. Wurfel has adequately warned of the bureaucratic process. It is a hazard, but a minor one, for the foreign investor.

While no great legal obstacles exist to impede the satisfactory administration of a foreign-owned business, the foreign investor needs to acquaint himself with the differences between the legal system of Colombia and his own country. The general forms

of business organization are roughly similar, and procedures for organizing a business basically the same. While one is accustomed in the U.S. to freedom to pursue any business of his choice, in Columbia certain enterprises, especially in the natural resources field, require licenses or government contracts. The extensive requirement of import licenses puts a premium on industries which propose to use within a relatively short period materials and goods produced in Colombia. There are instances of foreign firms constructing factory buildings and discovering they are unable to import components essential to production.

Civil litigation is slow and uncertain; courts frequently rely on the opinion of experts in technical matters, and lower courts are suspected of partiality. As a result, litigation is avoided and settlements out of court are the principal means of settling disputes.

The Colombian corporation is subject to greater supervision than one in the United States. Minority stockholders are more protected, and accounting procedures are prescribed. The role of the corporate board of directors is less significant, with the selection of the managing agent and auditor and the voting of dividends taking place at stockholders' meetings. However, the foreign corporation, operating through a Colombian subsidiary, may be controlled wholly from abroad, its manager chosen by the parent company's board.

Foreign-owned companies are required to employ a minimum fixed percentage of Colombian workmen and supervisory personnel, and the law requires equal pay for domestic and foreign employees performing the same work. In other respects, the foreign company is treated like the domestic corporation and is not subjected to rigors or penalties not borne by domestic investors.

The law prohibits restraint of trade and price fixing in terms similar to the provisions of U.S. antitrust legislation. In addition, corporations with considerable market power will find their prices subject to government control. In general, the government has considerable authority to control prices and allocations.

Colombia's tax system, though in need of reform, imposes no excess burden. Its labor legislation, although paternalistic and costly to the employer in terms of financing "fringe" benefits, does not result in an excessive burden, given the generally low level of wages. No doubt there is some backward-shifting involved with employers nominally carrying the burden.

The foreign company will not find the government hostile or the business climate unfriendly. This reviewer shares the author's optimism that Colombia affords good investment opportunities. The book is a *must* for any preliminary determination of the desirability of investing in Colombia.

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Money and the Economy. By JOHN J. KLEIN. New York: Harcourt, Brace & World, Inc., 1965. Pp. xii + 436. $7.50.

This book is designed to be a text for a one-semester basic course in money and banking. By the author's own definition, however, a textbook should be "clear, self-contained, and self-explanatory." While the book is lucid and well written in its discussion of monetary theory and policy, it does not meet the author's three standards in explaining the operation of our monetary system and its financial institutions. Contrary to the author's intention—"the student should be able to understand the basic principles of a discipline from a close reading of a text with a minimum of assistance from the instructor"—the beginning student may require considerable help in getting through the first seven chapters. Once this task is accomplished, however, the book provides an excellent policy-oriented text for thoughtful classroom discussion of current U. S. monetary issues.

The volume is divided into four parts, the first of which is devoted to the workings of our private financial institutions. It is in this first section that the book could profit by substantial revision or reorganization. While Chapter 2 opens innocently enough with the introduction of money as one of a number of forms of liquid wealth, the discussion becomes needlessly entangled in exchanges between savings deposits, demand deposits,

and vault cash. To clarify the discussion, the "T" account is then introduced as a tool of analysis, and balance sheet changes are shown for a depositor, for an individual commercial bank, and for the banking system as a whole. All of this is presented before the student has even been introduced to the items on the balance sheet of a commercial bank. When the description of a bank is finally given two chapters later, the discussion is focused on the distinction between member and nonmember banks, unit and branch banking, and chain, group, and correspondent banking. The balance sheet of a bank—perhaps the most effective explanation of what a bank actually is—does not appear until Chapter 5. Even before that point, the student has already been called upon to evaluate such statements as: "Commercial banks, in the absence of regulation, tend to intensify whatever phase of the business cycle is current. They do this through their unique ability to create and destroy money when making loans and investments." How can one understand how banks create and destroy money in Chapter 3 when the process of the creation of money is not given to them until Chapter 7? To be sure, the student has been exposed to the device of the T account; but unless he is first given an explanation of what these T accounts mean and not just a collection of rules for their use, he cannot possibly be expected to follow the discussion of the real bills doctrine which appears in Chapter 3. If the book is to be used for an introductory course in money and banking, its first section must be approached with caution.

The second section of the book examines the operation of the Federal Reserve System, and presents an excellent historical account of the development of our monetary controls. In the last two sections, the author develops an aggregate model of income determination which he then applies to the evaluation of current issues in monetary, fiscal, and international economic policy. These concluding sections are especially comprehensive for a book at the introductory level. Despite the shortcomings noted above, the author is to be commended for his highly readable analysis of monetary theory and its policy implications. Beyond the first section, the text is well written and easily understood, and deserves consideration for classroom use.

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Errata

In the article "The Banking Competition Controversy," September 1965, there were two typographical errors.

First, the formula used for testing market areas was incorrectly specified in footnote 18 (p. 8). It should read:

$$\frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

Second, in the first sentence at the top of the right-hand column on page 25, *million* should be substituted for *thousand* on the three occasions that thousand is stated.